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The American Exporter

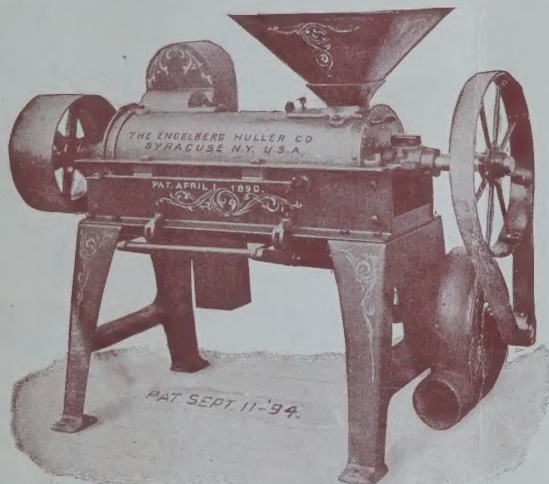
PUBLISHED BY THE JOHN C. COCHRAN COMPANY.

VOL. XXXVII.

NEW YORK, DECEMBER, 1895.

No. 1

Rice and Coffee Hulling Machinery



LATEST ENGELBERG COFFEE HULLER.

HIGHEST AWARD FOR RICE AND COFFEE HULLERS
AT WORLD'S FAIR, CHICAGO.

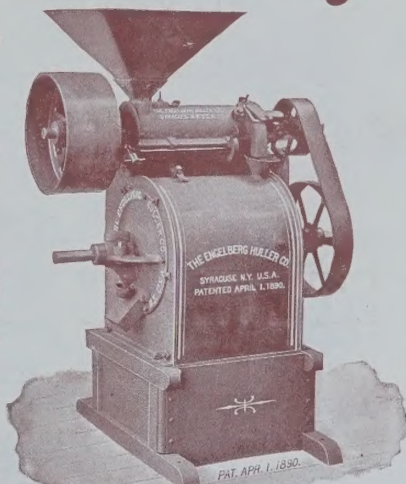
OUR COFFEE HULLER

will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the only machine which will grind the hulls fine, so that they will be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.

OUR RICE HULLER

is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used in plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation, if desired.

Send for Circular of our New Machines, with Prices and all Information.

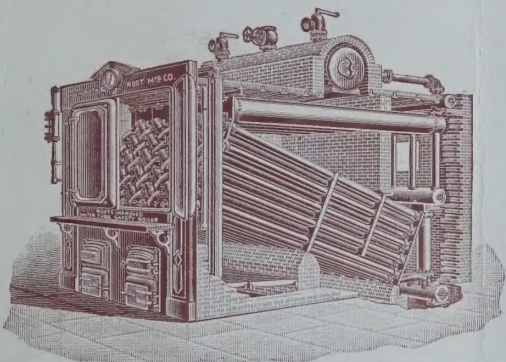


IMPROVED RICE HULLER AND POLISHER.

THE ENGELBERG HULLER COMPANY,

No. 331, Produce Exchange, New York, U. S. A.

ROOT IMPROVED WATER TUBE BOILER



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28 CLIFF STREET, NEW YORK, N. Y., U. S. A.

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The Largest Manufacturers in the United States
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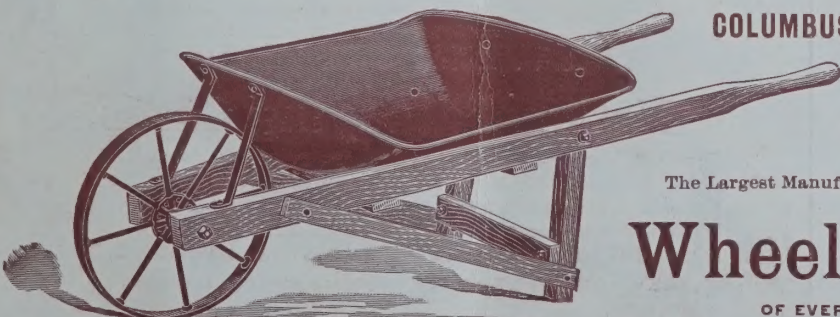
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Full Bolted Railroad or Canal Barrow.
With Jacobs' Patent Wood Wheel.

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With Lewis' Steel Wheel.



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A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY
WITHOUT CORDS OR SIDE ATTACHMENTS.

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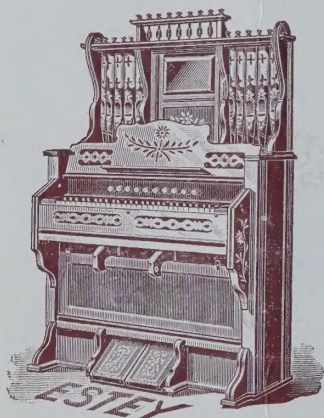
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SUPERLATIVE TONE QUALITY.



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A very attractive price will be made if you will
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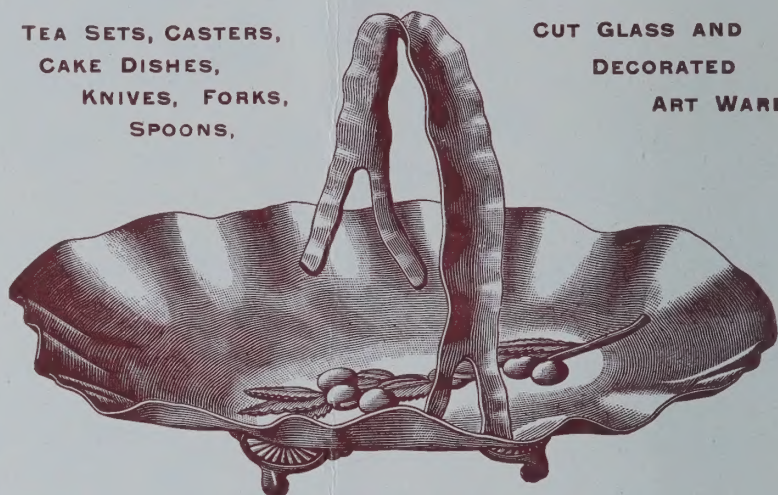
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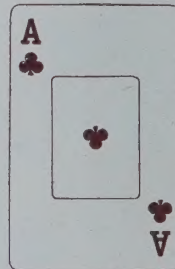
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"U. S." Playing Cards.

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188.	Capitol, regular size, $2\frac{1}{2} \times 3\frac{1}{2}$ 1st quality, Fifty-two cards; double enameled, high finish; Club cards.	1.40	16.80
202.	Sportsman's, regular size, $2\frac{1}{2} \times 3\frac{1}{2}$ 1st quality, Fifty-two cards; extra enameled; for sporting Clubs.	2.00	24.00
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89.	Treasury, regular size, $2\frac{1}{2} \times 3\frac{1}{2}$ 1st quality, Fifty-two cards; finest linen; for Clubs and particular players.	3.00	36.00
39.	Trophy Whist, French size, $2\frac{1}{4} \times 3\frac{1}{4}$ 1st quality, Fifty-two cards; fine finish, large indexes, new brand.	2.00	24.00



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93.	Ivory Whist, German size, $2\frac{1}{4} \times 3\frac{1}{4}$; 52 cards... 1st quality,	\$2.00	\$24.00
155.	Tourist, regular size, $2\frac{1}{2} \times 3\frac{1}{2}$; hard finish; for general stores.....	.70	8.40
145.	Texan, regular size, $2\frac{1}{2} \times 3\frac{1}{2}$; enameled; for general stores.....	.90	10.80
95.	Spanish Cards, Spanish size, $2\frac{1}{2} \times 3\frac{1}{2}$ 1st quality, Forty-eight cards; finest parchment stock; hard surface finish; permanent colors; superior to the finest Barcelona cards.	2.00	24.00

"National" Playing Cards.

22.	Rambler, regular size, $2\frac{1}{2} \times 3\frac{1}{2}$; hard process finish ... 1st quality,	.70	8.40
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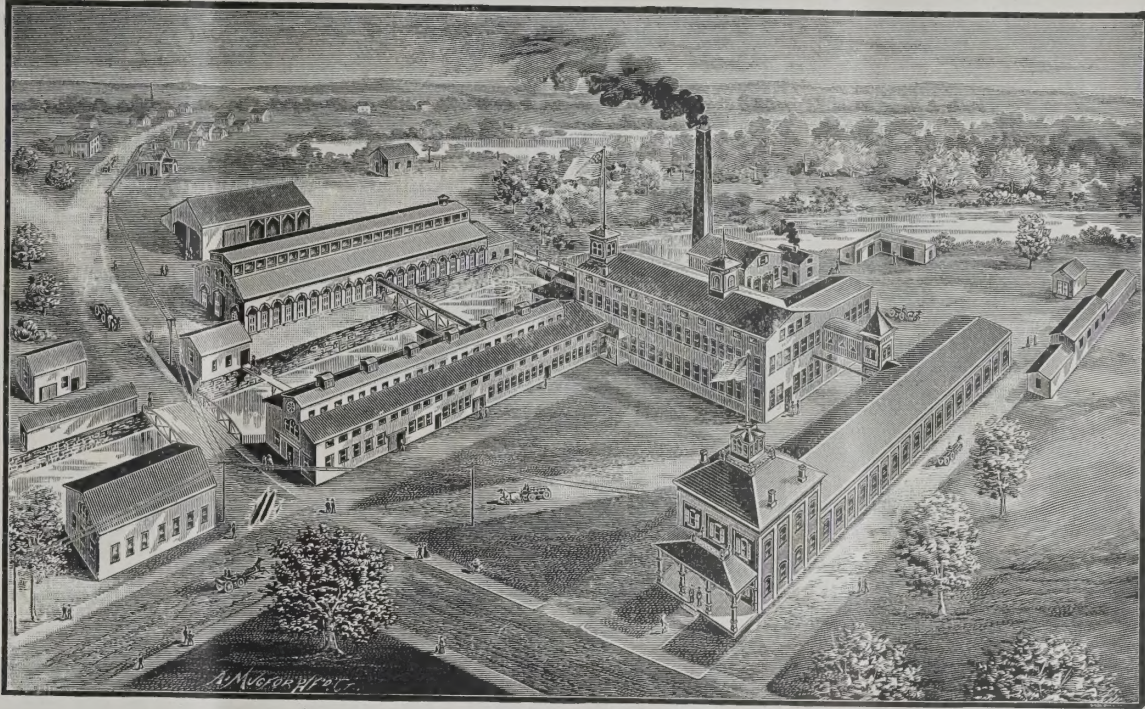
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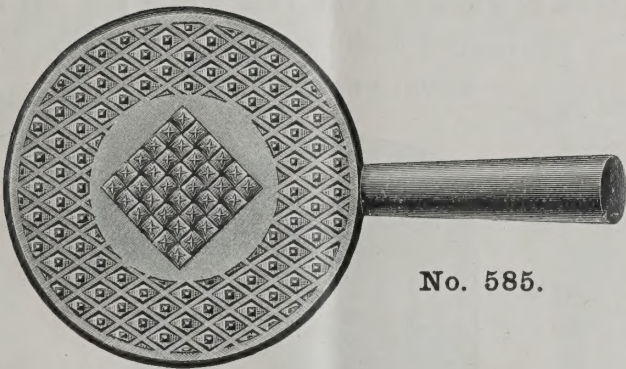
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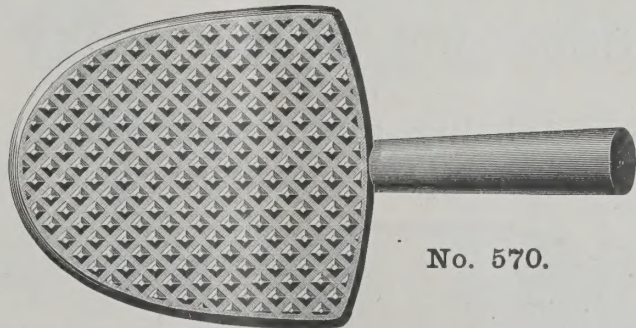
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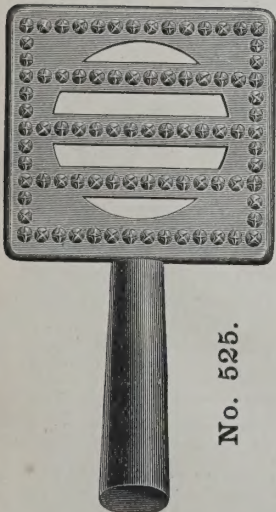
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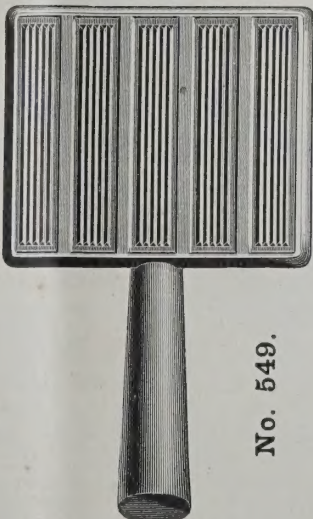
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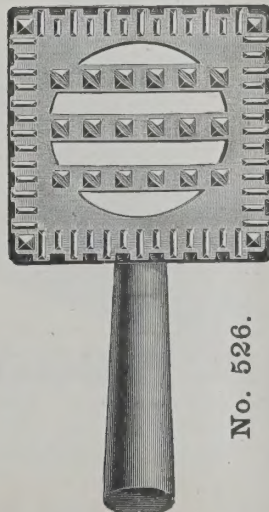
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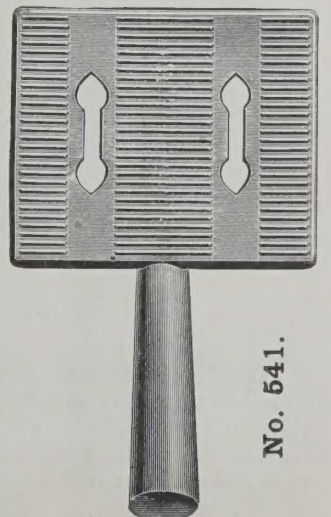
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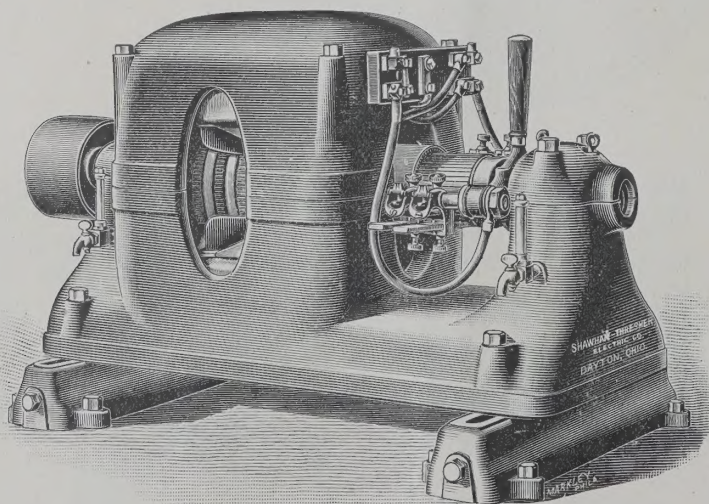
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Electric Lighting and
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Our **IRON CLAD TYPE** is **Simple, Strong and Compact** in construction, with **All Parts Interchangeable**. Very slow speed. Regulation perfectly automatic. No vibration. Center of gravity very low. Self-oiling universally supported bearings. Armature and field coils entirely protected from moisture, dirt or abrasion.

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PHILADELPHIA NOVELTY M'F'G CO.

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Retail, . . . 35 cents.
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Novelty Paper Fastener, \$4 per doz.; Keystone Paper Fastener, \$6 per doz.; Original Paper Fastener, \$12 per doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 30c. per 1,000; N. Paper Clip, 75c. per doz.; P. Paper Clip, 50c. per doz.; Novelty Pin Clip, 90c. per doz.; The Auto File, \$1.50 per doz.; BBC Paper Clip, \$1.50 per doz.; Balancing Board Clip, \$2, \$2.25, \$2.50 per doz.; Upright Paper Clip, \$1.50 per doz.; Accumulator Bill File, \$1.50 per doz.; Standard Pen Rack, \$1.75 per doz.; Spring Folding Pen Rack, \$2 per doz.; Combination Paper Weight and Clip, \$4 per doz.; Pocket Book Postage Stamp Holder, \$1 per doz.; Automatic Fountain Penholder, \$1.50 per doz.; Novelty Inkstand No. 1, \$6 per doz.; Novelty Inkstand No. 3, \$3 per doz.; Novelty Slate Pencil Sharpener, 40c. per doz.; Vest Pocket Glass Cutter, 90c. per doz.; Novelty Pocket Knife, \$4 per doz.; Novelty Hunting Knife, \$8 per doz.; Novelty Pocket Screw Driver, \$4 per doz.; Artists' Rotary Kit, \$5 per doz.; Self-Locking Door Indicator, \$2.50 per doz.; Madame Louie Hair Crimper, \$2.50 great gross; Novelty Stitched Hair Crimper, \$1.50 great gross; Automatic Fisher, \$1.50 per doz.; Automatic Towel Holder, \$1 per doz.; Suspension Gas Wrench, 60c. per doz.; Novelty Skein Holder, \$4.80 per doz.; Keyring Door Securer, \$1.50 per doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., \$1.25 and \$1.75 per doz.; The Masticator, \$1.75 per doz.; Duplex Can Opener, 30c. per doz.; Universal Wardrobe Shelf Bracket, \$1.50 per doz.; Double Match Box Bracket, \$2 per doz.; Universal Washer Cutter, \$8 per doz.; Novelty Pen Puller, 40c. per doz.

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WILL GIVE YOU FULL
INFORMATION ABOUT THE

A detailed black and white illustration of a vintage typewriter, likely a Remington model. The machine features a prominent keyboard with numerous keys, a carriage with a paper support mechanism, and a complex system of typebars and galleys. The brand name 'REMINGTON' is visible on the front panel. The illustration is framed by a decorative border.

PRICES: { No. 2 CALIGRAPH (72 Characters) WITH OFFICE CASE, - \$85.00
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AMERICAN GOLD.

AMERICAN GOLD.

237 Broadway, New York, U. S. A.

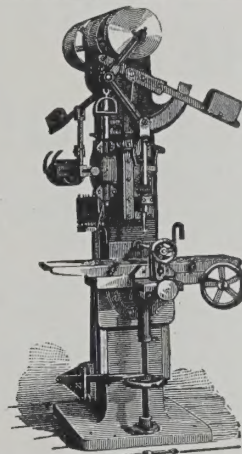
Three different styles of water faucets are shown. The leftmost faucet has a curved spout and a threaded base. The middle faucet has a straight spout and a decorative handle. The rightmost faucet has a straight spout and a decorative handle, with a key placed next to it.

FOR

A detailed technical illustration of a valve assembly. It features a large, five-lobed handwheel at the top, connected to a vertical stem. The stem passes through a series of stacked components, including a hexagonal nut and a flange. Below these, the stem terminates in a valve body with two side ports, each equipped with a hexagonal flange. The entire assembly is rendered in a dark, metallic style with fine lines indicating texture and mechanical details.

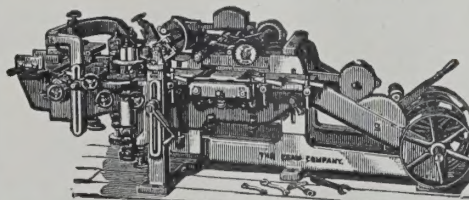
A detailed black and white illustration of a vintage portable toilet. The unit consists of a large, dark, rectangular tank mounted on a wall, with a toilet bowl and seat assembly attached to its front. The toilet bowl is white and flared, with a dark seat and lid. The entire unit is set against a wall of square tiles and sits on a checkered floor.

DALTON-INGERSOLL COMPANY,
BOSTON, MASS., U. S. A.



A detailed black and white illustration of a portable steam engine. The engine features a large horizontal boiler with a tall chimney at the front. A large flywheel is visible on the side, connected to a complex system of gears and pistons. The engine is mounted on a sturdy frame with four large spoked wheels. The text "HEINRICH BOHMANN 614.2" is inscribed on the side of the boiler. The artist's signature "G. EGGERT" is visible in the bottom left corner.

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MAKE A SPECIALTY
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MODERN AND IMPROVED
WOOD WORKING MACHINERY
OF EVERY DESCRIPTION.

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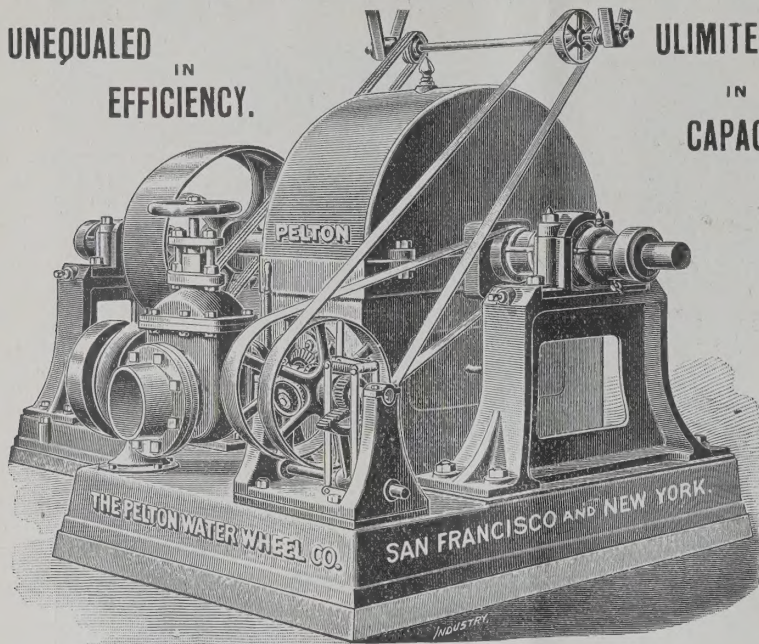
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Gives the Highest Efficiency of Any Wheel in the World.

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OVER 6,000 IN USE.

Affords the most simple and reliable power for all kinds of mining and manufacturing machinery. Adapted to all conditions and every variety of service.

ELECTRIC TRANSMISSION—Power from these Wheels can be transmitted long distances with small loss, and is now extensively used in all parts of the country for generating both power and light.

Applications should state amount, and head of water, power required, and for what purpose; also approximate length of pipe. Send for Circulars.

THE PELTON WATER WHEEL CO.,

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Deliveries made from San Francisco or New York, as may afford the most favorable freight rates.

It having come to the notice of the undersigned that their patent rights are being infringed upon, intending purchasers are hereby warned that all such infringements will be duly prosecuted. THE PELTON WATER WHEEL CO.

Pelton Water Motors

varying from the fraction of 1 up to 40 and 50 horse power, unequalled for all light-running machinery. Warranted to develop a given amount of power with one-half the water required by any other. Send for Circular. Address as above.



CHEAP PRINTING!

Every Man may print his own Cards, Circulars, etc.

Small hand presses, simply arranged with type for any language, by which any person can do good printing. Type-setting perfectly easy, to even a boy, with our printed instructions sent with every press.

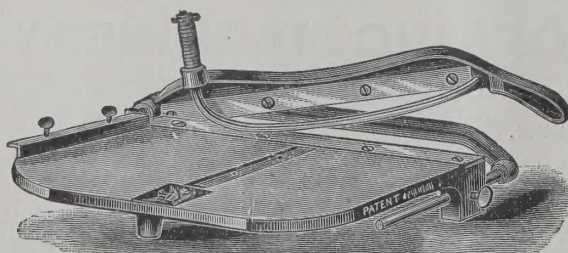
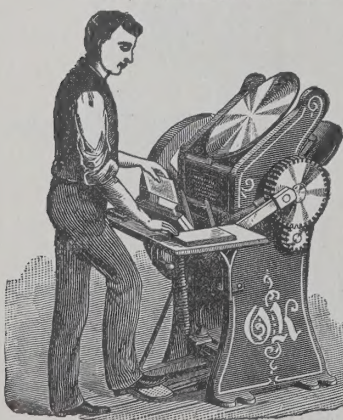
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No. XX Press prints cards, circulars, etc., up to 5 by 9 inches. Complete with 6 styles type, ink, etc. Price \$40.00. This outfit is entirely complete, ready for use.

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The O. K. Press.

A larger machine for fast work. Speed nearly 2,000 per hour. Chase, 9 by 13 inches. Weight, boxed, about 700 lbs. Price, only \$100.00. Price, \$200.00, if complete with type, ink, and all fixtures for general printing.



2 1/4 inch Hand Card and Paper Cutter, \$12.00.

Please write for our Illustrated Catalogue, by mail, of Presses, Type, Paper, Cards, etc., direct to our factory, near New York.

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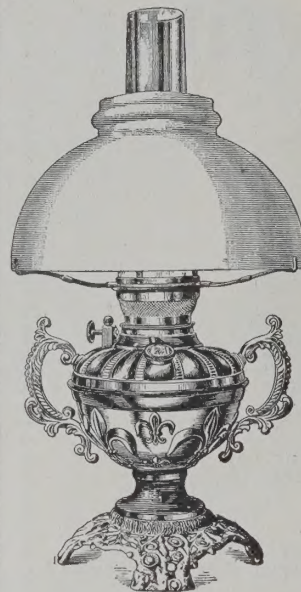
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Royal Central Draft Lamp.

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GIVES THE LARGEST LIGHT FOR WICK EXPOSURE OF ANY LAMP MADE.



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"Gilt Edge" Oil Polish, for ladies' and misses' shoes, is far superior to all others, as it blacks, polishes, softens and preserves the leather. Bottles hold about double the usual quantity. Price per gross, \$18.00 discount, 10 per cent.

Patent Leather Polishing Paste, the only article that will produce a quick, brilliant and waterproof lustre without injury to the leather. The only polish that does not crack patent leather. It leads the world. Price per gross, \$12.00; discount, 10 per cent.

Our Combination Package contains a bottle of "DANDY," for removing stains from yellow boots and shoes; also a box of "YELLOW POLISHING PASTE," for giving yellow shoes a brilliant, durable and waterproof polish as follows: First cleanse the leather with "Dandy," then apply our "Yellow Polishing Paste," and you will quickly get an elegant and lasting polish. On new shoes (or old ones that do not need cleansing) only use the polishing paste. Once used, always used. Price per gross, \$18.00; discount 10 per cent.

All first-class articles that suit every one. If you are not suited and want the best, send us a trial order.

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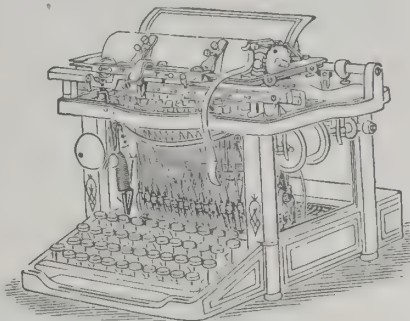
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A Machine which successfully performs
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THE STANDARD WRITING
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Embodies Correct
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In America, the native country of the Typewriter, the No. 2 Remington enjoys unquestioned supremacy. Nearly 100,000 machines of this model have been made and sold. It writes 76 to 80 characters, including capitals and small letters, punctuation marks, figures, etc., with only 39 keys to learn and manipulate. The No. 5 Remington, the standard model for England and the Continent, is provided with 8 more characters.

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**THE BEST BOILER
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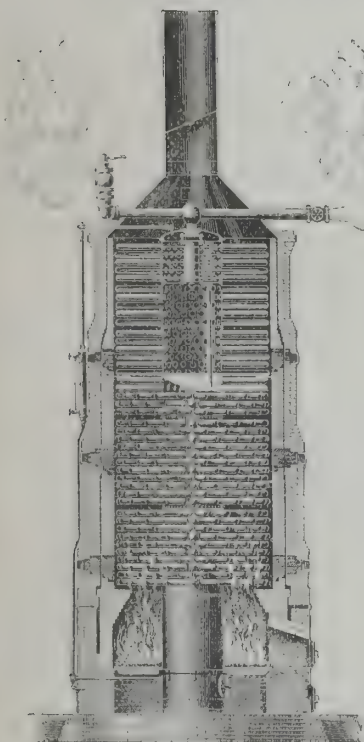
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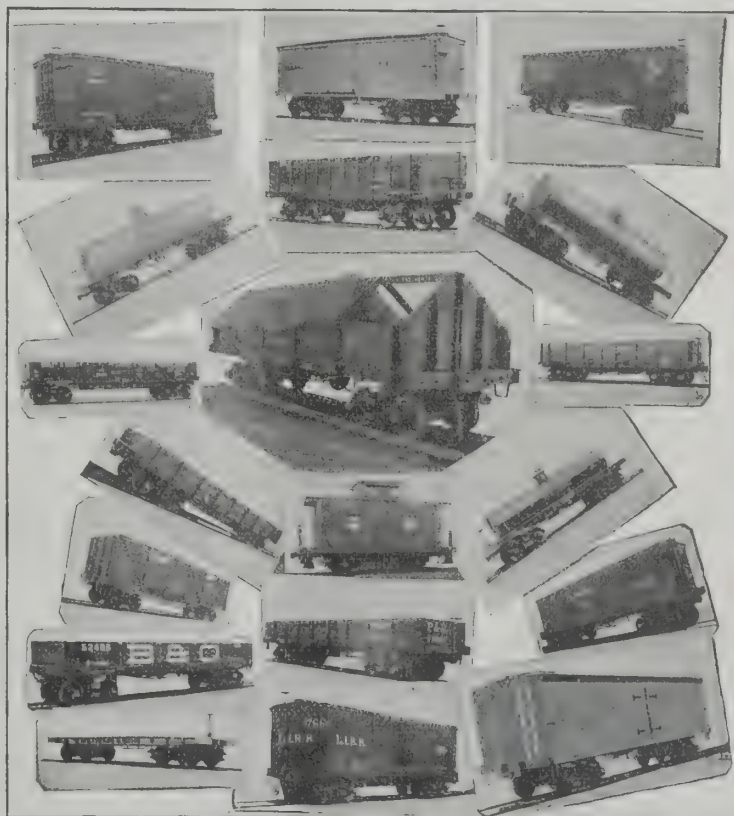
General Office: 716 EAST 13th STREET, NEW YORK, U. S. A.

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THE AMERICAN EXPORTER.

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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	Dietz, R. E. Co.—Lamps..... 21
American Chemical Mfg. & Mining Co.—Shoe Blacking..... 39	Diamond Cutlery Co.—Scissors Sharpener..... 39
American Lamp & Brass Co.—Lamps.. 8	Diamond Hardware Co.—Stove Polishing Mitten..... 31
American Writing Machine Co.—Caligraph..... 5	Dodd & Williams—Cut Soles and Leather..... 38
Armitage-Herschell Co.—Steam Riding Gallery..... 43	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 37
Ashcroft Mfg. Co. Indicators, Gauges, etc..... 16	Doig, W. S.—Box Nailing Machines..... 25
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc..... 23
Automatic Injector Co.—Boiler Injectors..... 43	Douglas, W. & B.—Pumps, etc..... 26
Ayer, J. C. Co.—Patent Medicines..... 25	Douglas, D. De Forrest—Artificial Limbs..... 43
Ball & Co., Dayton—Shoe Lasts..... 38	Douthitt, J. F.—Tapestry Paintings and Decorations..... 33
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Eagle Cotton Gin Co.—Cotton Gins.... 31
Barnett Co., G. & H.—Files..... 41	Eco Magnetic Clock Co.—Electric Clocks..... 45
Barton Mfg. Co.—Rubber Stamp Outfits..... 45	Electric Emery Wheel Co..... 45
Baxter Register Co.—Cash Registers... 21	Empire Moulding Works—Mouldings and Frames..... 31
Baxter, Stoner & Schenkelberger—Cut Soles..... 31	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Bay State Cut Sole Co..... 43	Estey Organ Co.—All kinds of Organs..... 2
Bignall & Keeler Mfg. Co.—Pipe Threading and Cutting Machines... 44	Falls Rivet & Machine Co.—Pulleys, Shafting, etc..... 46
Blanchard Machine Co.—Disintegrators..... 21	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Buffalo Portable Steel House Co.—Steel Cottages, Houses, etc..... 45	Faxon & Co.—O. J. Bicycles..... 23
Burgess, Edward A.—Box Nailing and Trimming Machines..... 45	Flagg Mfg. Co.—Shoe Machinery..... 42
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 43	Foster Mfg. Co., F. W.—Ball Cocks..... 25
Carver Cotton Gin Co..... 37	Fraser Mfg. Co.—Manufacturers of Coffee Machinery..... 31
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 46	Fulton Stamp Works—Rubber and Metal Stamps, etc..... 44
Chamberlin Mfg. Co.—Stump Pullers.. 44	Gleason & Bailey Mfg. Co.—Fire Department Supplies..... 21
Chandler & Taylor Co.—Steam Engines and Boilers..... 37	Globe Buffer Co.—Shoe Machinery..... 42
Cincinnati Tool Co.—Wood Drills..... 39	Goderich Organ Co.—Organs, Stools, etc..... 45
Collins Plow Co.—Plows, Hay and Straw Presses, etc..... 29	Goubert Mfg. Co..... 16
Columbus Phaeton Co..... 36	Gould Packing Co.—Steam and Water Packing..... 23
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 38	Goulds Mfg. Co.—Pumps of all kinds... 4
Connersville Blower Co.—Pressure Blowers..... 44	Gout Mfg. Co., David D. A..... 44
Crandall Machine Co.—Typewriters... 43	Grafton Stone Co.—Grindstones..... 48
Crosby Steam Gate and Valve Co.—Safety and Water Valves..... 23	Green Bros.—Watchmakers and Jewelers' Tools and Supplies..... 35
Cunningham Mfg. Co.—Desiccated Egg Food..... 41	Hancock Inspirator Co.—Boiler Feeders..... 47
Dalton-Ingersoll Co.—Water Closets.. 5	Hart Mfg. Co.—Faucet Can..... 38
Deane Steam Pump Co.—Steam Pumps..... 37	Hartshaw Co., Stewart—Shade Rollers..... 2
Dederick, P. K. & Co.—Agricultural Implements..... 45	Hauthaway, C. L. & Sons—Shoe Dressing..... 8
De la Balze Hermanos..... 45	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 5
De Laval Separator Co.—Cream Separators..... 25	Hazelton Boiler Co..... 7
DeLong, Oscar A.—Hook and Eye..... 42	Heller & Bros.—Files, Rasps, etc..... 36
Diago, Frederico C..... —	Holmes & Edwards Silver Co.—Spoons and Forks..... 35
	Horne, Dr. Electric Belt and Truss Co. 41
	Houchin & Huber—Soap and Candle Machinery..... 38
	Huber Mfg. Co.—Traction Engines and Grain Threshers..... 44

PAGE	PAGE
Huntley Mfg. Co.—Flour Mill Machinery..... 37	Powell Co., The Wm.—Valves..... 42
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 40	Prouty & Co., George W.—Printing Presses..... 46
Irwin Auger Bit Co..... 43	Pulver & Sons, Peter—Lubricating Compound..... 40
James & Co., George—Soles, Taps, Heels, etc..... 44	Putney, E. B.—Petit Ledger..... 45
Jeffrey Mfg. Co.—Detachable Chain Belting..... 42	Randall & Son, P. D.—Bolt Clippers... 38
Kalamazoo Railroad Velocipede & Car Car..... 47	Rhyder, W. J.—American Commercial Agency..... —
Kelly Axe Mfg. Co.—Axes..... —	Root Co., A. I.—Beekeepers' Supplies.. 38
Kelsey & Co.—Printing Presses..... 6	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 7
Kennedy Valve Mfg. Co.—Valves of all kinds..... 44	Samson Cordage Works—Cords of all kinds..... 21
Keystone Mfg. Co.—Agricultural Implements..... 26	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Seymour Cutlery Co., Henry—Shears and Scissors..... —
Knowles Loom Works—Looms..... 31	Schamandjian, D..... —
Layman, H. D.—Pneumatic Boats..... 36	Schrader's Son, A.—Diving Apparatus. 45
Leffel, Jas. & Co.—Water Wheels and Steam Engines..... 40	Shepard Mfg. Co.—Sterling Silver Ware..... 41
Marston & Co., J. M.—Foot and Hand Power Saws..... 36	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
Martin & Co., W. E.—Shoe Dressing.... 43	Silver Lake Co.—Braided Cordage..... 37
Mast, Foos & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 28	Simonds Mfg. Co.—Saws..... 36
Mey, F. H. C.—Chain Belting..... 43	Slatington-Bangor Slate Syndicate—Roof Slate..... 45
Milton Car Works—All kinds of Freight Cars..... 7	Smith & Co., H. D.—Carriage Hardware. 3
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Standard Radiator Co..... 39
Monarch Cycle Co.—Cycles..... 4	Standard Tool Co.—Twist Drills, etc... 23
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 36	Stanley Works, The—Brackets..... 21
Munger Cycle Co.—Bicycles..... 38	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 25
Myers, S. F. & Co.—Jewelry of all kinds..... 35	Storm Mfg. Co.—Dumb Waiters, etc... 23
National Meter Co.—Water Meters..... 19	Stubbs' Mercantile Agency..... 41
National Starch Mfg. Co.—Maizena..... 29	Sturtevant Co., B. F.—Pressure Blowers..... 47
New Jersey Car Spring & Rubber Co... 44	Sturtevant, F. C.—Egg Food and Sheep Dip..... 42
New Jersey Paint Works—Copper Paint, etc..... 40	Swain Turbine & Mfg. Co.—Water Wheels, etc..... 43
New Process Twist Drill Co..... 23	Tanite Co., The—Emery Wheels, Whetstones, etc..... 45
New York Metal Ceiling Co.—Metal Ceilings..... 42	Tarr, James H.—Copper Paint..... 40
Niagara Stamping and Tool Co.—Tools and Machinery for Tinsmiths and Sheet Metal Workers..... 43	Thomas Co., N. Spencer—Peerless Dyes..... 25
Nicholson File Co.—Files..... 21	Thomas & Co., T. B.—Hammocks..... 47
Norman & Evans—Steam Merry-go-rounds..... 45	Thomson Meter Co.—Water Meters... 48
Norton, W. D.—Engines, Boilers, etc... 44	Thresher Electric Co.—Electrical Machinery..... 4
Odell Typewriter Co.—Typewriters... 44	Tubular Rivet & Stud Co..... 46
Osborne & Co., C. S.—Saddle and Harness Tools..... 43	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 21
Pairpoint Mfg. Co.—Silver Plated Ware..... 2	Union Glue Co.—Challenge Liquid Glue..... 46
Pedrick & Ayer Co.—Machinery..... 16	Union Sand Paper & Emery Wheel Co.. 38
Pelton Water Wheel Co..... 6	Union Water Meter Co.—Water Meters 40
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	U. S. Buggy & Cart Co.—Wagons and Carriages..... 42
Pike Mfg. Co.—Oil, Scythe, Razor Stones, etc..... 45	U. S. Playing Card Co..... 2
Plume & Atwood Mfg. Co.—Lamps..... 6	Vetter, F.—Typewriter Desks, etc.... 45
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 41	Wagen, John F.—Importer..... 39
Porter, H. K.—Bolt Clippers..... 39	Walker & Pratt Mfg. Co.—Steam Kettles..... 45

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THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to *originate trade*, and not to *execute orders*, which is properly the function of the commission merchant.

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THE JOHN C. COCHRAN CO.

LORD SALISBURY'S BLUFF.

THE speech of Lord Salisbury on foreign affairs, Lord Mayor's Banquet, Mansion House, London, November 9, 1895, received marked attention from every civilized nation.

The Prime Minister, speaking at such a time, on such a subject, under pressure of many grave foreign questions, was obliged to place England's foreign policy in the strongest possible light. The strategic point of his effort was to make his statement so forceful that it would paralyze the ability to question it in all who might be affected by it, at home or abroad. The skill with which he accomplished his purposes is attested by the comments of statesmen, the public press, and all whose words create opinion throughout the world.

He weighted his utterance with the power of the realm and breathed into it the soul of English ambition, divinely ordained to rule the commerce of the world. His entire speech is a work of art, wrought to furnish a firm setting for the adamant sentence:

"Depend upon it, whatever may happen in that region (the far East), be it in the way of war or the way of commerce, we are equal to any competition that may be opposed to us, and may look with equal absolute equanimity on the action of any persons who think to exclude us from that fertile and commercial region, or who imagine that if we are admitted they can beat us in the markets of the world (cheers). I should be sorry if we felt undue sensitiveness in the matter."

As a statement of *disposition*, this sentence is perfect. As a statement of *ability*, it is without foundation in fact. It is based on material forces possessed. It fails to take account of natural economic forces that are moving with resistless accuracy to the consummation of greater gains for human welfare than the past has known. It opposes the logic of words to the logic of natural laws. It is not an edict that can be enforced, but a vaunting speech. It is an assumption without reference to sources of power, which ignores all factors of internal weakness and of opposing strength. It tactfully takes for granted that there is no cause for anxiety in the trend of events, and pretends that skill is possessed to successfully cope with the inevitable. Its untrue diagnosis is clearly seen when it is contrasted with the following Japanese acknowledgment:

"The rapid progress made in all institutions of this country during the past 30 years and the marvellous advances in commercial and industrial affairs are doubtless the fruits of the concrete efforts of the people, but their real fountain head is the universal progress of the world." (1)

"Be it in the way of war" England has hundreds of defenseless dependencies scattered all over the world. It has 8,793 defenceless sailing vessels and 5,771 steamers upon the oceans. In view of these facts, the best statement the Prime Minister could make at a conference of Colonial Agents was that:

"No improvement of fleets and no combination or alliance of foreign powers ought to be able for a moment to threaten British safety at home."

Did Lord Salisbury fully comprehend the significance of this statement? There is a broad difference between the "ought to be able" in this statement and the "we are equal to any competition" in his statement made to foreign powers on the 9th of November. England's defenceless dependencies and merchant marine are not "at home." The qualified statement of England's ability to protect "British safety at home" practically abandons every dependency, every vessel, every steamer to defenceless attack, and dwarfs England's power for war to the defence of the British Isles. Was this the cause of the failure of the Colonial Federation Defence Committee to secure a voice in the control of any portion of the British Navy in the event of war? Authority to govern is renounced when power to protect fails. A war between England and a power of the first class, not to mention a "combination or alliance of foreign powers" will inevitably destroy England's merchant marine and advance every dependency to the rank of an independent government.

"Be it by way of commerce," the economic forces of all nations are now engaged in a contest for supremacy in the markets of the world. The struggle of each for itself does not make the combination of all against each less real. In this contest successes are always secured by those who can satisfy human wants at lowest price. Authority, eloquence, wit, all fail of success in competition with economic advantage. The sources of economic power are natural resources, energy, intelligence and integrity. These are the physical, mechanical and intellectual forces of nations. Do the British at home possess these forces in sufficient abundance to justify the boast that they "cannot be beaten in the markets of the world?" Let those inclined to believe this "bluff" make a comparative statement of the natural resources of the United Kingdom and those of the United States. It is unnecessary to make a "combination of foreign powers." The United States will do. Let them compare the records of inventions, the products of English and American brains; let them examine the manifests of commerce in each port of the world and note how many commodities are not of English origin that, by their presence, necessarily "exclude us from that fertile and commercial region"; let them do this exhaustively, and they will construct a statement having power to overcome all sentiment and prejudice, and so to convince their reason that it will be impossible for them to believe Lord Salisbury's words to be true; without truth they have no effective force.

All potential economic forces that determine supremacy destine the United States to become the greatest commercial power in the world. Merchants and consumers of imported articles in foreign countries will become convinced of this fact if they will carefully examine the statements that are fairly set forth month by month in THE AMERICAN EXPORTER. They will serve their interests by supplying their wants with commodities of American origin.

THE GREATEST POWER IN THE WORLD.

THE assurance given by Lord Salisbury "with equal absolute equanimity" that England is "equal to any competition that may be opposed to it, be it in the way of war or in the way of competition" calls for a few comparisons by means of which thinking people everywhere may reach intelligent conclusions regarding the statement of the Prime Minister. For such a purpose it is well to put in evidence such testimony as all the world must accept as impartial.

Mr. Mulhall, the British statistician, in the *North American Review* for June, 1895, gives data of high value in determining the relative power of nations. He shows that the working power of the United States has almost doubled since 1840, the increase being from 17,346 million foot-tons daily, in 1840, to 129,306 million foot-tons daily in 1895. He shows that the total energy of working power in Great Britain, Germany and France is 136,270 million foot-tons daily, and that of the United States alone is 129,306. Does not this evidence prove beyond the possibility of doubt which is the greater power?

Dropping down from totals individual comparisons are made. Mr. Mulhall says: "An ordinary farm hand in the United States raises as much grain as three in England, four in France, five in Germany or six in Austria, which shows what an enormous waste of labor occurs in Europe, because farmers are not possessed of the same mechanical appliances as in the United States. One man in the United States, employed in agriculture, can feed 250, whereas in Europe one man feeds only 30 persons."

So much for physical power. In intellectual power the United States compares with European countries in the amount spent for education per capita, as follows: Great Britain almost 2 to 1, France 3 to 1, Germany 5 to 1, Austria 8 to 1, and Italy almost 10 to 1. In this connection Mr. Mulhall observes:

"The intellectual power of the Great Republic is in harmony with the industrial and mechanical. The census of 1890 showed that 87 per cent. of the total population over 10 years of age could read and write. It may be fearlessly asserted that in the history of

(1) Circular, Meiji Club, Tokio, published in *The Sun*, Tokio, November, 5, 1895.

the human race no nation ever before possessed 41,000,000 instructed citizens."

The lack of education in Europe is never so well shown as in the egotism of its "intelligent" people who never fail to plume themselves with airs of superiority on the score of knowledge possessed by the old countries, and to deride the crude education of the "raw country."

Passing from intellectual power Mr. Mulhall next considers the power of wealth. He says:

"If the physical development of the Great Republic in the last 70 years has been stupendous, the growth of wealth has been still more marvellous. The increase was from \$1,960,000,000 in 1820 to \$65,037,000,000 in 1895. The new wealth added during a single generation—that is, in the period of 30 years between 1860 and 1890—was no less than 49 milliards of dollars, which sum is one milliard over the total wealth of Great Britain."

In view of these facts, no intelligent mind can escape the conclusion so clearly reached by Mr. Mulhall who makes the following statement with all the weight of this great and impartial authority:

"If we take a survey of mankind in ancient or modern times as regards the physical, mechanical and intellectual forces of nations, we find nothing to compare with the United States in this present year of 1895. At the same time we see that the wealth of the United States surpasses that of any other nation, past or present."

This presents the position of the United States, at the close of its first century of commercial freedom celebrated on the 19th of December, 1895, as the greatest power in the world. This century was the "Age of Importation." With the commencement of its second century of commercial freedom the United States will enter upon the *Age of Exportation*, backed by the overmastering forces of superior natural resources, physical power, intellectual power and wealth. How empty the boast of England that no one "can beat us in the markets of the world!" The "beating" has already commenced. This fact is fully illustrated in the pages of THE AMERICAN EXPORTER.

AMERICAN SHIPBUILDERS IN THE MARKET.

ALL nations have made careful note of many incidents showing the rapid development of battle and merchant marine shipbuilding in the United States. The impression is now well fixed in their opinion that Americans can build ships worthy of their highest praise and which in an emergency are well able to command respect. In every feature of architecture, engineering, construction, material and adaptability to a definite purpose American-built ships, whether for war or for commerce, are to-day without superiors. But one more point is to be settled, to cause those wanting ships for any purpose to place their orders with American builders. It is the question of economic advantage. This question cannot be settled offhand by a simple comparison of bids.

Economy in operation, durability and adaptability, successfully to deal with the variable conditions to be met with during a ship's life, all go into the consideration. This requires an inspection of the record and material of everything entering into the creation of the ship, and also of the records of ships built and placed in commission. All of these factors explain and qualify price and may easily demonstrate the highest figures to be economically the lowest bid. American shipbuilders stand ready to satisfy ship buyers on this point who will come to their yards and become thoroughly competent to judge of the real value of the ships that may be built to their order.

Clement A. Griscom, president of the Society of American Naval Architects and Marine Engineers, said before a meeting of that body, November 7, 1895:

"The progress of American shipbuilding during the last year has been a convincing demonstration of the capacity of America to efficiently build ships of whatever size and type, either mercantile or naval, which any nation may require; while the output of ton-

nage is comparatively small, it must be from henceforth understood that the American shipbuilder is in the market for the trade of the world."

When the enormous outlay and the far-reaching evils of disasters are considered, it is clear that too great care cannot be taken in the placing of orders. Certainly no government can justify itself for placing such orders or entering upon the work of construction for its own account without first sending its experts to thoroughly examine the yards and products of American shipbuilders.

What the nations are doing and are to do in this direction is indicated by the following:

FRANCE.

Vice-Admiral Besnard, Minister of Marine, stated before the Budget Committee, October 16, 1895, that the China-Japan war had showed the necessity of possessing numerous swift, well-armed and armored cruisers.

The naval programme for the period between 1894 and 1896, inclusive, involves an annual expenditure of \$15,000,000, exclusive of torpedoes and guns. The new programme for building additional ironclads, cruisers and dispatch vessels would increase the expenditure \$2,000,000 annually, representing a total outlay for the next twelve years of \$200,000,000.

GERMANY.

The German Government is to place triple screws in three of its new second-class cruisers, and in one first-class battle-ship. This is a significant indorsement of Commodore Melville's action in securing the adoption of this principle in the American cruiser Columbia, the first large war vessel to be so equipped. Imitation is genuine praise.

RUSSIA.

The Russian Government has awarded a contract for 1,200 tons of armor plate for the new battle-ship Rostislav to the Bethlehem Iron Company, Bethlehem, Pa., U. S. A. The plate is to be completed by next fall, 1896, and will cost \$600,000; 2,000 skilled workmen will be employed in its production. There were 14 bidders for this work. This is evidence that American armor plate mills will have to be dealt with in any open competition for such work that takes place hereafter. It also confirms the point made in THE AMERICAN EXPORTER, October, 1895, that nations wanting their ships to be armored as well as the Russians will have to buy their armor at the same place.

JAPAN.

Japan's shipbuilding programme for the next five years has been definitely settled. In addition to the two large ironclads now building it is to have four line-of-battle ships, three cruisers of from 7,000 to 8,000 tons, four cruisers of 4,000 tons, with a speed of 20 knots, and a number of smaller craft. When this programme is carried out its fleet will comprise six first-class line-of-battle ships, each more powerful than any vessel flying a foreign flag in Eastern waters, and a large squadron of magnificent fast cruisers.

AN EXPERT OPINION.

Commander Miyaoka, Naval Attaché of the Japanese Legation at Washington, D. C., has made a strong report to the Naval Department of Japan on the merits of the United States battle-ship Indiana. Mr. Miyaoka has had long experience in naval affairs having been an instructor at the torpedo school in Japan. He spent an entire week on the Indiana, while it was at sea and in dock, and made his investigations with the critical eye of an expert. He went from deck to keel, examining the engines and watching the manipulations of the stokeholes, and went aloft to inspect the rigging and upper works of the craft.

Mr. Miyaoka sums up his conclusions in the statement that the Indiana is a magnificent ship, equal to, if not superior, to any battle-ship of its class afloat. His report is in great detail, showing all points of superiority.

THE MAGNITUDE OF AMERICAN COMMERCE.

PEOPLE in foreign countries who have not travelled in America nor had the privilege of dealing with American manufacturers, are unable to form a correct opinion of the widespread area, the exhaustless resources, the energy, intelligence and executive ability of industrial and commercial life, and the magnitude of the commerce of the American Republic. To them their own country is a large place and, of course, nothing can be great in their estimation that is not greater than their own, as the term "great" is comparative. Anything is great in comparison with something smaller, and very large countries are small in comparison with larger ones.

All people know the importance of railroads, and can easily understand that comparisons of mileage of railroads and tons of freight handled will give a very fair idea of the relative importance of countries. Recently published statistics show that the total mileage of railroads in the world is 400,000. Of this mileage, 150,000, or nearly one-half, are in the United States. The entire tonnage of railway freight in the world, moved 100 miles, during the year ending June, 1905, was 1,400,000,000. Of this tonnage, 800,000,000 were moved in the United States. The United States, therefore, lacks only 20,000 miles of having one-half of all the railroad mileage in the world, and moved on its roads 100,000,000 tons more than one-half of all the railroad freight in the world. The total ocean tonnage of the world for the year was 140,000,000. These figures give a vivid idea of the magnitude of American commerce when presented in a concrete statement, as follows:

World's railroad tonnage, exclusive of United States..	600,000,000
World's ocean tonnage, including United States	140,000,000
Total	740,000,000
Railroad tonnage within United States,.....	800,000,000
Excess of United States over balance of the world combined railroad and ocean tonnage.....	60,000,000

Surely the United States is a very great country, or all the countries in all the rest of the world must be exceedingly small. There is no objection to every person thinking his own country to be as great as he may be pleased to regard it. It is desirable, in the interests of truth, however, that he should understand that the commerce of all other countries in the world does not equal the commerce of the United States. It should be borne in mind that these figures do not include the tonnage of freight on American lakes, rivers and canals.

THE VALUE OF GOOD ENGINEERING WORK.

"Be sure you are right, then go ahead."

THIS rule applies to all actions, but the beneficence of its observance, the fatal results of disobedience to it, are in proportion to the importance of the work to be undertaken. In works of the first magnitude, such as the construction of street and steam railroads, waterworks, gas and electric lighting works, shipbuilding, the erection of government buildings, structures for business purposes and manufacturing plants, no part of the investment will yield a better return than that paid for good engineering employed in the preparation of plans and specifications, the inspection of material used and work performed.

Engineering work is being applied with equally good results to construction, for the promotion of health and comfort, and for the development of industry and commerce. Of the first class, a work of the highest importance is being carried out in the city of Santos, Brazil, where deaths from yellow fever and kindred diseases have averaged 205 to 1,000 inhabitants annually. The engineering work of preparing the plans for a sanitary system for this city was intrusted to Prof. E. A. Fuertes, of the College of Civil Engineering, for which he has received a fee of \$120,000, which is said to be the largest fee ever paid to an engineer. Under his direction, from 50 to 60 engineers were employed on the ground, and a large number were employed at Cornell University, Ithaca, New York, U. S. A., to draw up plans from his specifications. Such an immense project

has seldom been placed in one man's hands. It practically means that the city shall be pulled down and rebuilt on sanitary principles. It will cost the Brazilian Government from two to three million dollars.

The adoption of triple screws for second-class cruisers by the German Government is another indorsement of the value placed on good American engineering work. Commodore Melville was the first to design triple screws and place them in service in the United States Navy. The part which the Bureau of Steam Engineering has taken in the construction of the ships in the United States Navy, under the leadership of Commodore Melville, has been exceedingly creditable. No work of this class of equal importance and magnitude has been done anywhere, in either private or government establishments, with fewer mistakes or mishaps.

The evil result of going ahead without being sure the action is right is not difficult to find. Many industrial undertakings have failed to earn a profit, and the cause of failure has been attributed to every conceivable source except the right one. Those who do not have the judgment to employ good engineering at the outset seldom have the judgment to detect the cause of their failure to earn a profit to the want of good engineering. The great importance of a well-planned, substantial roadbed to the life and economic operation of railroad rolling stock and the equal importance of durable foundations for building and machinery attest, in a high degree, the value of good engineering. Viewed from the standpoint of successful financial operation and the consequences to human comfort, health and life, to proceed with the construction of large works of any kind without the guidance of good engineering is an economic and social crime. Those responsible for such work, governments or private corporations, in any part of the world, should benefit by the ability of American engineers to serve them well. They are requested to send advices regarding such undertakings to THE AMERICAN EXPORTER.

"LABOR-PERFORMING," "WAGE-EARNING" MACHINERY.

NO one will question the necessity of using correctly in commercial transactions the technical terms found in tables of weights and measures, but few will understand the disastrous effect of a wrong idea resulting from a common erroneous use of any descriptive term.

Things familiar receive but little attention. This fact is illustrated by the universal use of the term "labor-saving machinery," when the truth is machinery does not save labor; it performs labor. The function of machinery is to perform labor at a less cost than can be reached without its aid. It must do work for less pay than man or the machine cannot displace the man. The advantages of the machine are in reducing cost and relieving man from the necessity of working at the lowest rates commerce demands. An electric motor will deliver the power of one man at a cost of five cents a day and never grow tired. No man can do that and live. The wages of a machine is interest on investment, cost of depreciation and cost of operations. This is the exact wages of slaves. In industrial economy the machine, a thing without a soul, has become the slave, and the man, a creature with a soul, has become free. Exercising the rights of freedom he is growing in intelligence and the enjoyment of comforts. The low cost of products resulting from the low cost of labor performed by machinery is the greatest achievement of the age.

All slaves require overseers. Overseers must be intelligent. Intelligence performs less physical labor and earns better pay than physical labor can command. The more pay working people receive the greater their purchasing power becomes. Increased purchasing power always means increased demand for labor. This discloses the error of the ignorant who look upon machinery as their enemy. They think if the machine saves labor it will decrease the demand for labor and thus rob them of the opportunity to earn a living. This is the idea that gave motive to the mob that destroyed

machinery in the La Ferme cigarette factory at St. Petersburg, November 24, 1895.

Machinery performs labor at the lowest possible cost. It releases men from working at its low rate of wages and enables them to ascend in the scale of industrial intelligence and independence. This is fully illustrated by the experience of the United States where more labor-performing machinery is in use than in any other country in the world. The average yearly wages of workingmen have been as follows:

1860, 1,311,000 workmen earned each.....	\$289
1870, 2,054,000 " " "	302
1880, 2,733,000 " " "	347
1890, 4,713,000 " " "	485

This shows an increase of workingmen and an increase in wages based on an erroneous increase in labor-performing machinery. It explains why the commerce of the United States is equal to that of all the rest of the world.

The physical fact is, machinery performs labor; the economic fact is, machinery works for low wages; the industrial fact is, when workingmen can supply their wants with commodities produced at a lower labor cost than their own pay their economic condition is improved. In the light of these facts, correcting economic nomenclature will do more than simply to correct the use of language. It will correct erroneous economic thought and action and thus induce a greater degree of prosperity for all who will follow American example and will buy and learn to operate American machinery as a means of acquiring industrial liberty.

AMERICANS THE LARGEST AND BEST RAILROAD BUILDERS.

THE people of all countries, when railroad construction is contemplated, can profitably give their attention to the statements that follow. The figures are taken from the reports of the British Board of Trade and the United States Interstate Commerce Commission:

MILEAGE OF ROADS.

United States.....	178,708
United Kingdom	20,908
United States greater than the United Kingdom....	157,800

INVESTMENTS.

United States	\$11,565,600,000
United Kingdom	4,926,936,000
United States greater than the United Kingdom....	\$6,638,664,000

COST PER MILE.

United Kingdom	\$235,643
United States	64,773
United States less than the United Kingdom	\$170,875

This difference in cost may be partly accounted for by the style of construction and difference in conditions, one being an old, densely settled, the other a new and thinly settled country.

It is difference in conditions, as well as in cost, that demonstrates Americans to be the ablest railroad builders in the world. They have contended with and successfully solved every problem of engineering, topographical and climatic conditions, and financial schemes of the first magnitude. They are masters of the art of railroad building, equipment and operation, so far out-distancing all others as to be in a position of isolated excellence.

The *Storekeeper*, Sidney, New South Wales, says:

There can be no more legitimate or safe way of aiding the class engaged in producing from the soil than by using the railways to convey their products at the lowest possible rate.

To extend this aid effectually, cost to those who own, as well as to those who use the roads, must be low. The operation of the Government roads in New South Wales, for the years ending 1888-1889 to 1893-1894, resulted in a deficit of over \$7,000,000, and in Victoria, for the year just closed, of \$1,900,000. In the face of this fact a demand for "light railroads" is being urged "to aid the class engaged in producing from the soil." It is more than a coincidence—it is an unerring indication of the trend of events—to find the same demand, at the same time, being urged for the same rea-

son in Australia and England. The fact that the present roads in both countries are English built, English equipped and English operated has a vital significance.

When a deficit results from the operation of a road owned by private capital, it is paid by the stockholders; if owned by the state, by the taxpayers. In either event those who patronize the road pay its revenues. A railroad is a very perishable piece of property. It must be well built, equipped and maintained, or it will gradually sink to the condition of old machinery which invariably handicaps its owner in his competition with one who employs none but the best machinery of the latest designs and makes. A road that does not earn enough to pay all fixed charges, cost of maintenance and operation, whether owned by a government or private capital, cannot be kept in as serviceable a condition as one that earns sufficient to pay all of these charges and a 6 per cent. dividend. It is to the interest of both owners and users that a road shall be built and operated at the lowest cost consistent with good material, work and service.

Competition between nations for supremacy in the markets of the world will, during the next decade, force many reductions in the cost of exchanging commodities between primary producers and final consumers. This is clearly indicated by the demand for "light railroads" springing up in Europe and the new and old countries opening to civilization. This demand for serviceable railroads at a low rate of investment is not only to bring their cost within the means of those who are to own, but also to bring the cost of operating them within the requirements of those who are to use them.

Governments and corporations in old or new countries desiring railroads at low cost can obtain them with the greatest certainty by employing American engineers to make their plans and specifications and to inspect all work and materials; American contractors to construct their lines, furnish their equipment and start them into operation.

The cost of moving the products of the soil, mines and manufacturing establishments is an important factor in commerce. The pressure of competition between nations, not between lines in the same country, is the force that will drive this cost down to the lowest profitable rates for the lowest cost roads. In this as in many other things, America has an enormous advantage.

GETTING ACQUAINTED WITH AMERICA.

MANY persons in other nations who consider themselves particularly well informed, because they have visited many points in the old world, are living in ignorance of the wonders of the Western Hemisphere.

Whether they be on business or pleasure bent, it is not possible for such persons to do a more profitable thing than to spend some time in exploring the capabilities of the United States to supply their requirements. From the many examples that might be cited of those who are taking this course, mention may be made of Baron de Batz and his friend, Baudon de Mony, who are going to the Rocky Mountains for pleasure and on business, which they do not wish to make public.

Mr. Henri Sevene, a civil engineer in the employ of the French Government tobacco factories, is inspecting our modern machinery for the manufacturing of both tobacco and matches, of which the French Government has a monopoly. He is visiting the principal tobacco manufacturing plants in this country. An inspection of plants in operation is certainly the best way to obtain correct information concerning them.

Both the scenery and the industries of the United States are without duplication elsewhere. None who can afford to travel for pleasure, or who seek information, can justly fail to visit them.

—One of the principal London merchants recently said that the United States had the means of supplying quite two-thirds of the whole world with manufactures, so far as productive capacity, plant, etc., were concerned. And he added that the time would no doubt come when America would be the severest competitor with England, or any other country, in the markets of the world.

American Cutlery in England.

From Our Special London Correspondent.

LONDON, December 2, 1895.

SOME discussion has been going on in the English trade press respecting the merits of British and American cutlery. The English writers maintain that the American cutlery is simply "not in it" when it comes into competition with that made in England, and particularly in Sheffield. The British reading public have been treated to one aide of the picture—namely, the English—and as one tale always holds good until the other one is told, I have interviewed those people on this side of the Atlantic who are most likely to have expert knowledge of the subject. As the English trade papers circulate abroad and in markets where American goods are sold, such partial statements as those referred to above are liable to cause considerable damage to American interests if allowed to pass without comment.

"Is it true," I asked, "that there is practically no trade done in England in importing American cutlery of any kind?"

I put this question to a gentleman who is representing one of the largest American cutlery firms in the United Kingdom. He smiled, but it seemed to be more in sorrow than in anger at being interrogated on such a point. "I can safely say," he said emphatically, "that 19 out of every 20 cutlers in England have American-made cutlery of some description in their stores or shops. For instance, the American-made shears are simply driving the English 'scissors' quite out of the market, although, of course, I do not mean to imply that the American article is at present omnipotent, but it is making steady and sure progress. Now see this pair of shears," and he took out of a nicely furnished case a beautifully finished pair of shears and clipped off *with the tips of the shears* several pieces of calico about 15 or 20 folds thick. "Now," he said, "do you know any sort of scissors or shears made in England which will do that?"

"American cutlery is decidedly good cutlery. By that I mean that it is devoid of the cheap and nasty style of manufacture. There is a certain finish and appearance about American goods which at once stamps them as being well made. But yet we still have prejudice to encounter from some quarters in England, and large numbers of our goods do not bear our name although made in the United States. On the other hand, the words 'made in America' are sufficient guarantee to thousands of buyers here that the goods are first class. In such cases no further introduction is needed. As an instance of the old conservative type of buyer, and how such people are occasionally fooled, I may say that on a recent occasion while crossing from England to New York I got into conversation with a fellow passenger who informed me that he had recently purchased a quantity of tailor's shears in England because he could not get them so good anywhere else, and certainly not at his home in the United States. I assured him that I was also engaged in the cutlery trade and could possibly tell him something about the shears he had bought. On producing them I found on examination that *they were American-made shears but bore the name of an English firm*. He had paid quite 20 per cent. more for those shears in England than he would have paid in America. He was simply a specimen of many more people who are led away by a mere statement.

"When I was a boy," continued my informant, "we were always taught that America was not a manufacturing nation and that we could only get a good penknife from Rodgers, Westenholme, or some other British firm. I fancy that condition of affairs has quite passed away nowadays and that our best makers of cutlery in the United States can hold their own with the finest products of Sheffield.

"You have asked me as to whether there is any truth in the statement that American-made knives have not a good cutting edge. Now this idea has arisen simply from the fact that there has been a kind of feeling among Americans in favor of silver-plated knives. I do not say what the reason was; possibly it was partly due to the fact that silver-plated knives are easier to clean than others. But I can say this, that it is practically impossible to get a keen edge on a silver-plated knife, and it has been owing to that reason, and that only, that American knives have in any way suffered from this suspicion that they don't cut well. Many makers in the States are now turning out their knives nickel plated, which does not at all affect the cutting properties of the steel. All this boasted superiority of European cutlery over that made in America is so much moonshine. It is simply a fashionable and foolish craze, and it is certainly astonishing to find that Americans have no conception at all of the vast demand that is steadily growing up all over the world, and particularly in England, for American manufactures. They are astonished to find American pins in London, Manchester, Birmingham and other large cities, and will hardly believe it possible for America to supply cutlery to English buyers. But we are going ahead and I can assure you without exaggeration that American manufacturers and exporters hold the market in these goods throughout Canada, South America, a good part of Australasia, South Africa, Central America and Great Britain. We as a nation have not yet realized even among ourselves the vast possibilities which our export trade opens up to us for the future throughout the markets of the world."

Since writing the above, the Sheffield correspondent of the *Engineer* (London) has stated in that paper that "it is somewhat remarkable that the Americans are almost completely commanding the market in shears. A practical tailor states that the reason is not far to seek. The English maker does not study the requirements of the cutter as the American maker does. The English shear is so heavy to the hand in the using that the operator gets tired much more quickly than by using the American shear. In the American production a very thin edge of steel is welded onto the rim plate, while in the Sheffield (English) made shear the plate is steel throughout. The make of the handle is also dif-

ferent, both the differences tending to superfluous weight. This is an old grievance. Of course, there are several who prefer the Sheffield-made shear, but in nearly all the large tailoring establishments which an observant man visits he will find that the American-made shear is in use."

I would add that the above quotation appeared in an English trade paper of the very highest standing, and the opinions quoted are absolutely independent testimony to the value of American shears, and incidentally to American cutlery generally.

The Christmas Card Trade in London.

OUR special London correspondent writes: A vast trade is conducted in this city in Christmas cards, novelties, &c., a considerable quantity of goods produced in this country going abroad to the English colonies and other parts of the world. Among the leading firms I may note Messrs. Raphael Tuck & Sons, of London and New York City. Their cards and Christmas goods are quite beautiful works of art, and deserve the very highest praise. I may say that practically all their cards (except those in black and white) are printed abroad—mainly in Germany, Saxony, &c.; but they are all designed by English artists. A card has often to go through the editor's hands twenty times before it is finally approved. This trade is growing every year, and bids fair to become a gigantic industry all to itself. Foreign buyers can obtain all they require from the New York house.

Another excellent firm is Faulkner & Co., of Jewin street, London. They issue some very fine specimens of work, and have improved their black and white productions to such a great extent that greater beauty seems well nigh impossible. Good taste characterizes all their work. Messrs. Hill & Co., of Fore street, London, are essentially art publishers, their efforts to cater for a home and foreign public being attended with great success. Among so much that is tasty it is always difficult to select any one thing for special mention, but their reproductions in photo-gravure are well worth a permanent place in any art album. I may add, that foreign-made machinery is largely used here in color printing, which is another indication of the fact that England has much to learn in mechanical matters.

F. C. C.

World-Wide Demand for American Manufactures.

A NOTABLE feature of our export trade in recent months has been the widening of the markets for American manufactures. Thus this fall \$100,000 worth of American cotton fabrics has been sent to Arabia, while Roumania, Turkey and Spain have placed trial orders for hardware. Russia has bought very large lines of American manufactured rubber. Brazil has placed large orders for chemicals of American manufacture. France bought American bicycles to the value of \$12,000 this autumn, while the United States of Colombia purchased \$8,000 worth of American "wheels." South and Central American countries have bought large quantities of American cutlery. The Argentine Republic took \$60,000 worth of binding twine. Electrical material is in demand in Brazil, which between August 1 and October 1 placed orders for more than \$30,000 worth of it in the United States. Australia favors American carriages, and has bought many this autumn. South Africa is a very large purchaser of American manufactures, notably agricultural implements, machinery, trunks and bags. There has been a large increase in the exportation of agricultural implements this fall, Argentina taking them to the value of \$270,000, while Uruguay's purchase footed up \$52,000. England is the largest purchaser of our manufactured goods, especially of those that may be called "Yankee inventions." The Australian colonies have recently expended \$60,000 for American paper and paper goods. The exports above mentioned, it should be said, are those from the port of New York alone, and other ports will considerably swell the total of our shipments to foreign ports.

American Goods at the Front in South Africa.

DURING the past two months there has been quite a rush for fencing materials, and more particularly on barbed wire. Unfortunately for the British manufacturer, a very large quantity of barbed wire is being imported from America, and the reason is not far to seek. English makers quote £10 15s. per ton, whereas American wire is landed in Cape Town, all charges paid, for less than that sum. It is true that for a given weight the American wire does not run out the same length, but the difference in price is greater than the difference in length, and, as barbed wire is generally sold per roll and not per mile, merchants prefer to stock the American.

The demand for spades during the past few months has been lamentably small, owing in a great measure to the fact that small vineyard plows are fast coming into vogue. Here, again, England is being completely beaten by America. Why cannot English makers turn out cheap and light cultivators to compete with the American? American goods generally are finding great favor in the Cape Town market, and we think America likely to become a more serious competitor than Germany. The American manufacturer pays great attention to details overlooked in England. Goods are made to pack closely—to "nest"—and so freight is saved. Even the charges for packing-cases are less. Then, in sending out price lists the Americans never fail to give full particulars as to discounts, and the travellers sent out are generally a very superior class of men, who have their business at their finger ends.

—The United States sold abroad, in the fiscal year ended June 30th last, \$31,000,000 worth of iron and steel—\$4,000,000 more than in any previous year.

Silver and Gold Models for German Artists.

AMERICAN silver and goldsmiths may well feel proud of their ability to teach their European brethren the art of designing and executing silver and gold ornamental and table ware.

The Museum of Artistic Trades, Berlin, bought at the World's Fair, Chicago, quite a large number of silver and gold articles manufactured by leading American firms in the precious metals industry. The collection has been on exhibition in the Royal Academy of Design, Hanau, Germany, the leading manufacturing centre on the Continent for silver and gold smithing. The criticisms of the collection, published in the Hanau papers, freely conceded that German artists have much to learn from American workmen, but the critics failed fully to discover the secret of the superiority of American art work.

The secret of the superiority of American art—of American workmanship in every department of endeavor—is found in the inspiration derived by the worker from the American idea of freedom and the enjoyment of the American standard of living.

America has drawn from the old world its most enterprising spirits, gifted with eager desire and ability to act. Here they mingle and work under conditions of perfect freedom of person, thought and expression. The products of their genius, skill and energy are classed as "American," but, in fact, they are cosmopolitan. Herein is the secret of the superiority of American art and American workmanship. One criticism on this collection of American silver and gold models very nearly reveals this truth, as will be seen in the extract following, for which we are indebted to the *Jewelers' Circular and Horological Review*, New York.

Speaking of the American silver and gold works of art on exhibition at the Royal Academy of Design, the critic says:

"It is a collection of forty-seven different objects of ornament and table-ware, and emanated from the renowned firms of Tiffany & Co., Whiting Manufacturing Co., and Gorham Manufacturing Co., New York. It is a peculiar collection of works of the precious metal industry offered to us, interesting not only by the charm of novelty, but also in formal and technical regard it may instigate many an idea. A large, one-handled vase of brown faience painted with chrysanthemums, so-called Rockwood faience, and with partly ornamental silver coating, strikes our attention first. This style of technical execution, new to us, is simply that the burned and glazed clay or glass vessel is by galvanism ornamented with a silver coating, which is then partly cut away again and engraved. The same kind of treatment may also be observed on a number of umbrella handles.

"The most valuable piece—it cost nearly 1,800 marks—is a slender silver pitcher, influenced in its shape by the Persio-Indian metal vessels, set with several green jewels, and partly ornamented with enamel of an opaque tone, recalling old ivory; it is of an exceedingly handsome effect. Two most precious pieces of silver are a small silver vase, into the surface of which a large number of barock pearls are let, giving the appearance as if they were growing out, and ornamented with various aqua-marines and superbly etched branch work. A technical piece of art is a small ornamental dish of filigree, the interstices of which are filled with transparent émail à jour (cloisonné enamel). A silver-chased dish is ornamented with a wreath of shells, which by etching and lacquering have been brought to produce a perfectly natural effect. A vessel in the shape of a wine cooler, with serpent handles (it is a so-called 'loving cup'), is distinguished for its ornamental inscription in bas-relief, produced by etching. On a gilt pitcher with rococo motives on the rim, the excellently chased naturalistic flowers in red gold stand off very effectively from the field of green gold. Of two field flasks, one is of silver and ornamented with large gilt azaleas, partly chased lightly in places, energetically designed and furnished with sharp contours by deep engraving; the other, of pressed and cut glass with silver mounting, enhanced at the lower end with finely etched thistle leaf work. The other articles are different kinds of table-ware, dippers, spoons, cake, jelly, and oyster knives, forks, etc., partly of an original and practical shape, mostly pressed, and ornamented on the handle with naturalistic flowers and other devices.

"As a whole and on the purely technical side, one must acknowledge the solidity, skill and neatness of the work of the pieces. It is not easy to characterize the artistic inclination of the Americans, as evinced by these articles. Numerous factors, European art forms, Oriental influence, naturalistics, the practical American sense, also here and there a little American barbarism and 'parvenue' ('mushroom') taste—all are here embodied in a strange conglomeration. The great artistic tradition by which European art was schooled and purified in taste is visibly wanting in the Americans, but, then, neither does it clog them, as it does us occasionally, as an embarrassing ballast; they employ their forms free and fearless. This is also due to the circumstance that the working force of the large firms is composed of workmen of all countries, each of whom leaves his peculiar imprint upon the work. The result is that the American articles possess peculiar, novel and surprising features. Most assuredly, many things are, as regards style, simply jargon, bizarrerie and insipidness. But then, again, many are original, worthy of attention and of happy invention.

"We believe that from these works many a fruitful conception may doubtless be obtained, especially as regards the technical side. The technical novelty of the galvanic coating of clay and glass vessels could be well adopted in our industry; also the endeavor to impart to the silverware a greater charm of color by part gilding or differently colored gilding, jewels, enamel and etching. These features are eminently worthy of imitation. Special attention is called to the extensive use of etching, with which exceedingly beautiful effects were obtained on the silver pitcher, fish vase, loving cup, and various other pieces."

Economic War.

THE ethics of commerce demand that all representations be honest. This requirement is as binding on governments as upon individuals. All attempts to prevent importations by making misrepresentations as to the quality of the article or the responsibility of a company reacts on those making the misrepresentation. Here are some instances:

LIFE INSURANCE—REPRISAL NOW DEMANDED.

The Magdeburg Fire Insurance Company, whose home office is in Magdeburg, Prussia, has applied to the New York Department of Insurance to do business in this State.

The New York Life, the Equitable Life and the Mutual Life companies stand back to back to prevent the admission of the Magdeburg company or any other Prussian insurance company at the port of New York on any terms.

The three American companies are out after the three R's of international law—Retaliation, Reprisal and Revenge. They have been driven out of Prussia by hostile legislation, and they want the Prussian kept out of America.

CAUSE FOR RETALIATION.

"I submit," says John A. McCall, president of the New York Life, in a letter written recently to Superintendent Pierce, "that, if there was ever justification or excuse for the application of the retaliatory laws of this State, and all other States, it is shown herein."

Mr. McCall refers to the experience of his own company and the Mutual and Equitable in Prussia. The Equitable was the first American company to enter Prussia. It took out a license in 1877, complying with all the demands of the Berlin Government. In 1886, the business having prospered, the company erected a palace in Berlin, at the cost of several millions of marks. Some years ago the Prussian Government began to impose restrictions and conditions hostile to the American companies.

DRIVEN OUT BY LEGISLATION.

These grew more rigorous each year. At length the Minister of the Interior, in March, 1892, issued a decree, which, if it had been possible to comply with, would have virtually driven the Equitable and the other American companies out of business in Prussia. The aid of the authorities at Washington was invoked, but vainly.

On the head of all this comes the application of the Prussian Magdeburg Company to enter this field in competition with the New York companies.

BAD FOR AMERICAN COMMERCE.

The officers of the American schooner Leon, which arrived from Tahiti recently, state that France is injuring the commerce of the United States in the Southern seas. The Governor of Tahiti has made a regulation by which all trading vessels must fly the French flag and be half owned and officered by Frenchmen. Nine-tenths of the traders are owned by Americans, and American sailors man them. In consequence many men are out of employment and a number of vessels are tied up at Papeete. The Leon was obliged to wait for months before securing a crew.

WANT IMPORTED CATTLE QUARANTINED.

The peasantry of Breton have been displeased by the landing at St. Malo of 300 cab horses and 300 bullocks, and have determined to do everything in their power to discourage further similar consignments. To this end they laid the matter before M. Brune, who represents a St. Malo district in the Chamber of Deputies, and he has appealed to M. Vigre, Minister of Agriculture, to issue an order that all foreign cattle vessels be quarantined before the cattle aboard them are landed.

The Universal Use of Bicycles.

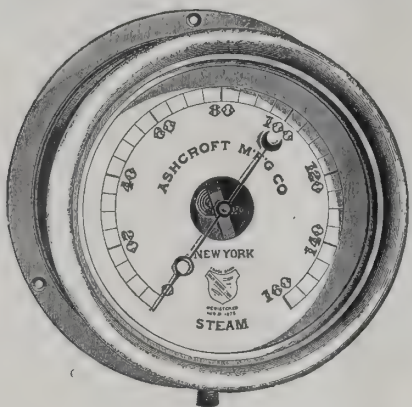
THE progress which the bicycle has made and is making in the leading civilized countries of the world is simply marvellous. In fact, in every land where civilization is at its height the two-wheeled system of self-propelled locomotion is considered an established institution. In America alone more than 1,000,000 men, women and children are owners of their wheels, while another half million of the population well understand the art of riding the delusive "bike." During the year 1894 upward of 300,000 bicycles were made and sold in the United States, and the estimate for 1895, made by conservative men, is 600,000. Is it any wonder that the liveryman sees only a dark future for his business, and that the industry of horseracing is anxious? In Europe the bicycle craze is even more virulent than it is in America. In London and Paris thousands of infatuated whelers plunge madly about the streets from dark until 2 and 3 o'clock in the morning. Great Britain has 1,300,000 cyclists, and a capital of £75,000,000 invested in the production of bicycles and tricycles, and the factories in which such machines are manufactured give daily employment to 42,000 men. The census returns of France enumerate 161,271 cycles which are used solely for pleasure. Those used by tradesmen in any of their business transactions are not taxed. On that account the above figures fail to convey anything like an accurate idea of the number of wheels owned in that country. In Belgium, Holland, Germany, Austria and Italy the bicycle is fast superseding all other means of locomotion, especially where pleasure and health are the objects sought. In short, the bicycle has, within a very few years, become a very necessary adjunct to modern civilization.—*St. Louis Republic*.

—Our machinery exports are on the increase. A few years ago the English hawhawed at the idea of American machinery, but in the last nine months our little bill for our manufactured product was \$145,793,586. In 12 months it will run close on to \$200,000,000. How is that?

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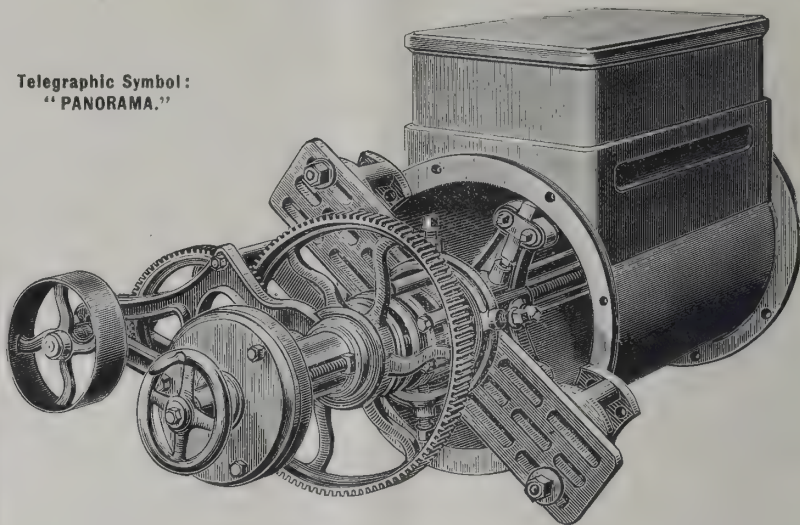


REVOLUTION COUNTERS, CLOCKS, TEST GAUGES, TEST
PUMPS, PIPE TAPS, PIPE TONGS, PIPE STOCKS AND
DIES, PIPE CUTTERS, STEAM TRAPS AND
LOW-WATER DETECTORS.

Office and Salesrooms:

111 LIBERTY ST., NEW YORK, U.S.A.

New Portable Cylinder Boring Machine FOR LOCOMOTIVES.

Telegraphic Symbol:
"PANORAMA."

The Bar of the above mentioned machine is made of steel, four inches (4") in diameter; has a steel feed-screw, with a long steel feed-nut; we have a bronze thrust bearing of an improved pattern for the end thrust of the cut on the screw, and the bearing shown at the end of the cylinder contains an annular split thrust collar, which is used for holding the bar in position and to resist the cutting of the tools, as well as a bearing for the bar.

This machine is furnished with suitable cutter-heads with long bearings on the bar, for boring cylinders from 12 to 24 inches in diameter; we also furnish two bearings similar to the one shown in cut. This extra bearing being for the back end, when cylinder head is off.

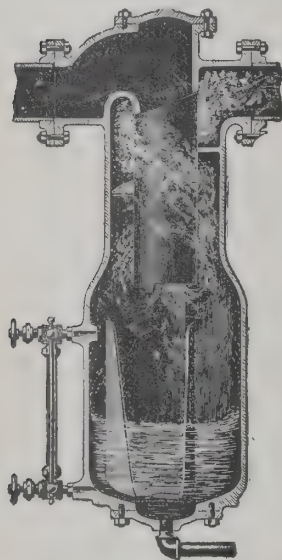
An expanding gland chuck is also furnished, for use in stuffing box, when it is not necessary to take off the back cylinder-head and guides. This chuck, with its various sizes of wedges, will, when in place, support the end of the bar perfectly true.

We furnish with this machine wrenches, etc., also a chest, equipped with hasp and lock, suitable for keeping different parts in.

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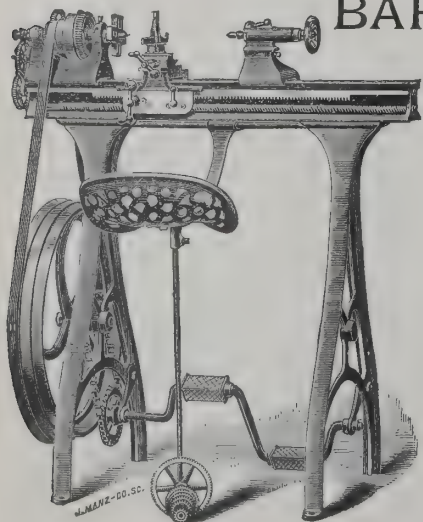
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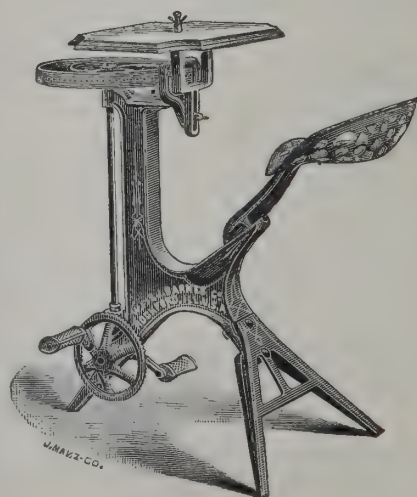
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DEVOTED TO THE FOREIGN TRADE IN MACHINERY AND HARDWARE.

Competition in Hardware Manufacture.

OPPOSED to Lord Salisbury's statement that "no one can beat us in the markets of the world," the views of those in the ranks of English home trade may be given to sustain the point that if England can be beaten in its home market, it can certainly be beaten "in the markets of the world."

The Hardwareman, London, for November 9, 1895, comments as follows on a report made by a committee of investigation to the Wolverhampton Chamber of Commerce, on Foreign Competition with Black Country Industries. Three primary reasons for the success of competition from the Continent of Europe are given.

"These are—more extended hours of labor, a much lower rate of wages, and less freightage rates for the conveyance of merchandise from the district of production to the seaport. The hours of labor in Belgium and Germany have an average *minimum* of 60 per week, against 54 as a *maximum* in this country, while the rate of wages in England are 25 to 50 per cent. more than in the two countries on the Continent in the hardware trades, and in the iron trade it is, roughly speaking, 100 to 300 per cent. more, in one or two cases—such as plate rolling, for instance—even the latter figure being exceeded. And yet some people are still shaking their heads and wondering why Belgian girders find their way into Birmingham. In the matter of freightage, taking an average of 100 miles in every direction, it appears that the South Staffordshire ironmasters pay two-thirds more, whether by canal or railway, than their Belgian competitors. The committee, in their report, draw no moral or inference from these statistics, which are given in elaborate detail, but they simply state plain facts. It is obvious to all, however, that under such conditions South Staffordshire (England) iron and hardware producers are very severely handicapped. Whatever may be the view taken as to the comparative rates of wages paid in this country, there can be only one opinion as to those paid in corresponding trades in Belgium and Germany, and that is that they are wretchedly low, and that, with the long hours of work there, industry is only one remove from slavery. But the Wolverhampton committee is very candid and plain spoken to English manufacturers and workmen. Admitting the advantages already named, there are others which our Continental rivals enjoy as the reward of the care with which they always study the fancies, and even the whims and caprices, of their customers. They will make any kind of goods 'to order,' and in the matter of parcelling and packing they bestow the utmost care to secure neatness and attractiveness of appearance and to give those who have to handle their goods the least possible trouble. Then their travellers and agents explore every corner of the civilized globe, and carry price lists and catalogues printed in every leading language, and priced according to the currency in vogue in each nation. All these are items of enterprise which may well be studied by our home manufacturers, and, as to the low wages and long hours prevailing still across the Channel, we may fairly hope that labor unions and philanthropic agencies will in time remove at least some of the glaring inequalities which exist between the workmen of Belgium and Germany and those of old England."

Competition with the poorly paid labor of the Continent would seem to be sufficiently severe, but another view is given by "An Ironmonger" whose letter is published in *The Hardwareman*. He discusses

AMERICAN COMPETITION.

"The recent defeats we have sustained in yachting and athletic circles, call for a little inquiry on our part as to the causes. Not only must we keep our heads erect in sporting circles, but also turn our attention to the more vital question, 'Is American hardware superseding English?' We cannot but confess that, from the retailer's point of view, it pays him better to sell American locks, as, not only are they cheaper and better finished, but they come to him in a handier form. Every lock is wrapped separately, complete with all screws, &c., necessary for fixing, and packed in a strong cardboard box, with a neat and attractive label outside. To the English manufacturer this may seem a trifling difference, but when he comes to consider the trouble to be taken with locks that arrive with only a piece of paper around every half dozen, which have to be boxed and rewrapped on arrival, and extra demand on the time and pocket of the retailer, perhaps these few lines may arouse them from their lethargy, and cause them to follow the example of their cousins across the water. Another boon from the Americans is the supplying of locks set up in blocks as models, showing the lock as it would appear when fixed. The agents from whom I buy my American hardware will supply me with

models of any lock or latch *free*, irrespective of quantity or quality of locks ordered. 'But why should we go to the expense of having locks set up as models?' I hear some of our manufacturers saying. Because, firstly, it would pay them to; as any ironmonger who has tried the difference in selling locks in this way can tell them of his increase in the sales, so that it is to our mutual advantage. Secondly, the cost of erecting a gross of models would be about the same as an ironmonger would have to pay to have a dozen set locally; and, thirdly, *because others do it*, and these others, who are well known to be very acute and far-seeing, are the Americans. The way these Yankees look ahead may be summed up in a quotation from a letter I received from the enterprising and business-like manager of the Bissell Carpet Sweeper Company. 'It pays me better,' he writes, 'to study my friend, the ironmonger, and do whatever is in my power to help him in pushing the sale of my sweepers, as I know he will make them a staple line, whereas, if I supplied them to the draper, he would push them at a cut for a season, then forget them.'"

The English manufacturer is shown to be placed between two fires, the human slave of the old world and the machine slave of America, with the advantage in favor of the United States. Notwithstanding the long hours and poor pay of the Continental workmen, the products of American machine slaves, under the management of well paid American workmen, are declared by "Ironmonger" to be "cheaper and better finished." This is the fact that decides who is victor in the war of business, when nation meets nation in competition in the markets of the world.

England and the Iron Supply.

MOST of our readers will be surprised to know that this country exported last year about one-third as much iron and steel manufactures as did Great Britain, and that this year the total promises to be nearly, if not quite, half that of England. English exports, which in 1882 were \$155,000,000, have gradually declined until last year they were about \$100,000,000, while those of the United States, which ten years ago were less than \$16,000,000, have shown an uninterrupted growth, and now stand at a probable total of \$33,000,000 for the current calendar year.

Lists published by the American Iron and Steel Association show that of 28 articles enumerated, 19 have made a growth in exports over the preceding year, and of the remaining nine the decreases are small, and are probably caused more by lower prices for the manufactured goods than by a falling off in the quantity sent abroad. The improved demand for American-made goods appears most marked in castings, firearms, locomotives, builders' hardware, sewing machines and general machinery, wherein the excellence and superior workmanship of American manufactures command a market. The mean increase on the articles enumerated above is not far from 25 per cent., though locomotives show a gain from valuation of about \$400,000 last year to nearly \$1,120,000 this year.

In the tin plate, shipbuilding, mining and engineering industries in England there have been all the year, and still continue, labor difficulties, while on this side the water there has been little cause for complaint on that score. By these troubles England has lost a vast prestige and no little trade. The price of coal is constantly appreciating on that side of the water, while here it is tending downward, and is absolutely less than there. The price of steel rails was in July and August only about \$2 more here than in England, and that of billets was actually less.

The predominance of the United States in the mining of Bessemer ore and in the manufacture of steel can be shown by a few figures in an interesting and startling manner. The world's production of pig iron in 1892—that year being taken because of the general activity in the trade—was a trifle less than 26,000,000 tons, of which the United States made 9,157,000 tons, England 6,616,000 and Germany 4,793,000. In the same year the United States made 42 per cent. of the Bessemer steel of the world, while England and Germany made 15 and 19 per cent. respectively. During the last 15 years the production of pig iron in the United States has increased by 343 per cent., that of Germany by 197 per cent. and that of England by only one-tenth of 1 per cent. In Bessemer steel the United States has gained 680 per cent. in the same period, Germany 387 and the United Kingdom 97. This country is becoming more and more the leader and the arbiter in the iron trade of the world, and at the present rate will shortly completely dominate.

French Technical Opinion of American Engines.

THAT a new country, as North America must still be regarded from many points of view, should be able to supply its own needs is in itself a remarkable fact. This, however, does not seem to satisfy the activity of its people, with which Europe will have to count in future, on the battlefield of industry. The news that comes to us from the United States of an order for 40 locomotives for Russia, placed with the Baldwin Works, of Philadelphia, will be received with a certain degree of surprise on this side of the Atlantic, especially if, as we are told, this order is to be followed by more important ones. Already in the matter of furnishing railroad material American constructors had taken possession of the South American market, and were carrying on a formidable competition against the English in their own colonies, especially in New Zealand and Australia; but it was hardly expected that they should be seen obtaining a foothold in Europe. Now, in what concerns more especially the railroad materials of which we speak here, this success is not due to the commercial ability and skill of the Americans; it depends, above all, on industrial and technical causes, which it is, perhaps, just as well to recall here.

The types from which modern American locomotives have grown were selected from the point of view of being suitable to run on light roads, often poorly constructed, with curves of very short radius, in countries often destitute of material for repairs, or where it is difficult to make repairs.

The result was locomotives at once flexible, rough in form, and extremely strong, which in new countries and in the colonies have shown themselves to be clearly superior to European engines in the matters of duration and cost of maintenance. Provided with distributing springs in all parts and resting on divided trucks, which, while insuring sufficient stability, give them great flexibility, these machines adapt themselves in a wonderful manner to unevenness in the roadbed and easily pass around curves of very short radius. The simplicity of the parts allow of their being put in charge of men of little experience and of the employment of persons more or less rough and clumsy. They are, besides, very powerful and built on broad lines, yet not weighing too much on the axles, thanks to the use of divided trucks that do away with the need for the outer framework. These were reasons more than sufficient to secure the success of these engines in undeveloped countries and colonies, even though their cost had not been less than that of European locomotives. But as a matter of fact the Baldwin Company is able to deliver complete locomotives with their tenders at from eight to nine cents a pound, including packing. Why are our constructors, who have less to pay for labor and no more for material, unable to produce for the same price? The low cost of American locomotives, it must not be forgotten, does not arise from lack of care in construction, but because they are studied and built by makers who never lose sight of the cost price, and who do not sacrifice the simplicity of the parts to any scientific consideration. Advance to them means delivering more and more powerful engines for a constantly diminishing price; they care little whether or no they act economically or present certain guarantees demanded by the great European companies. Yet the Baldwin Works now turn out a great many compound engines of a type that seems hardly logical, but which costs little to apply and gives satisfactory results.

The low cost of American engines arises from the fact that all the parts are studied and drawn with a view to their being made entirely by machinery, and that all the castings are made according to set models, are interchangeable, and can be used for any engine of a particular type, dispensing with new calculations for each new construction. The wheels are of cast steel, and very strong, the hearths are of steel, and the boilers of iron; the stopcocks are generally castings, and the tube work iron or steel, neither copper nor bronze being used.

American builders do not make engines and tenders in one piece, as the axle weight would be too great for the light roadbeds.

Russia may, from some standpoints, be looked upon as a new country, and to this reason doubtless may the success of the Baldwin Company be attributed. We must not forget, however, that the Americans are improving their lines year by year, and are now able to suit their engines to the new conditions that are growing nearer and nearer to those existing in Europe, and that their competition, as it enlarges its sphere of action, becomes daily more formidable.—*La Geine Civil, Paris.*

Unprecedented Demand for Iron and Steel.

THE subject that seems to be uppermost in the minds of those who make the markets of the world, as well as with those who cursorily study the progress of industry and commerce from a standpoint of criticism and conjecture, is that of surplus. It is certainly a vital and serious question, when considered in its relation to the iron trade. The majority of business men concede that the unusual demand and the practically temporarily limited capacity of our furnaces afford legitimate grounds for the advance in this product, but they propound the pertinent query, just the same: What will be the condition of the iron trade when present brisk orders are filled, the general markets supplied and large accumulated stocks are piled up in the yards? The reply is simple, and there is every reason to believe that to consider the subject on the narrow basis of theory and comparison with the past, is to look at the problem in an unfair manner. It may be almost confidently asserted that there is no danger of overproduction in this material—certainly none in sight at present. The mills are using more than the furnaces produce of crude iron, stocks are sold ahead for six months in some instances, and the constantly increasing invasion of the domain of lumber alone is opening up new uses for iron that of itself is a vastly important element. Aside from the fact of the actual superiority,

lasting qualities and price of iron, the rapid denudation of our forests shows that its adoption for new purposes is becoming a positive necessity.

The increasing demand for iron and steel, and the augmented value of the same, are all due in a measure to their substitution for other materials used in construction. A first-class building now has doors of light steel; even the window frames are formed of iron. A non-inflammable structure is the result, a structure good for a full hundred years, a structure that can be insured at half the cost of the destructible buildings of a decade since. There is, too, an extraordinary expansion in the demand for these materials in our ship yards. The cost of a barge made of wood is double that of a quarter of a century since, while the cost of a steel barge is about one-third what it was in 1870. This shows a tendency towards increased price for lumber and timber, because of scarcity. The life of a steel ship would be three or four times that of a vessel made of wood. These are the considerations that are promoting the use of iron and steel buildings, and ships of all sort, from a yawl to an ocean liner.

Taking a general view of the iron and steel situation it looks as if there is reason for vast congratulation, when considered in the aggregate. The advance in values has had a far-reaching effect all over the world, has stimulated trade in a variety of ways, and foretells prosperity for manufacturers, and good wages and steady work for the artisan. Even a temporary slump cannot destroy the universal sentiment of confidence. One of the largest mills in Pennsylvania is working on a structural order, involving over a million tons, which will run it well into 1896, and large demands from Mexico are causing unexampled activity among the Southern manufacturers, in some instances putting in blast furnaces that have been idle for several years.—*Chicago Journal of Commerce.*

Gold Mining and Machinery in South Africa.

THE more the gold fields of the Transvaal are exploited the more is the opinion justified that they represent a magnificent arena for the employment of mining machinery, says *London Implement and Machinery Review*. The number of stamps at work at the Witwatersrand mines at the end of 1894 was 2,169, and this number was increased during the first six months of the present year to 2,642. As the angle of the main reef shows signs of flattening at increasing depths it is impossible to say how far the workable area may not extend. Claims are at present held at a distance of as much as three miles from the out-crop. On this question of how far the workable area extends, and upon the possibility of profitable mining at lower levels (which is largely a matter of the employment of the most modern machinery and appliances so as to work economically) depends the distant future of the Transvaal mines. Assuming an average continuance of 8,000 feet for the reefs, Messrs. Hatch and Chalmers, authors of "The Gold Mines of the Rand," compute a production from the Witwatersrand generally "within the next half century, of upwards of £700,000,000 in value, of which £200,000,000 should be clear profit." The total nominal capital of the Witwatersrand mines listed on the Johannesburg Stock Exchange was, in June last, about £20,000,000, valued at nearly £82,000,000. Deep level companies not included in the list have a further market worth of at least £20,000,000; so that the total valuation of Rand mining stocks amounts to over £100,000,000 sterling. The dividends paid last year came to £1,095,000, and the total since 1877 has been £5,589,000. The output of gold from the Witwatersrand district rose from 23,000 ounces in 1887 to 2,023,000 ounces, estimated at nearly £7,000,000 last year; while for the first six months of the current year the output was 1,121,000 ounces, or £3,840,000. Including the outlying districts, the total output for the Transvaal last year was 2,266,000 ounces, having a money value of £7,800,000, or one-fifth of the total product of the world. The Transvaal ranked third in the list, the United States being first with £7,952,000, and Australia second with £7,855,000. It is calculated that by the end of the present century the annual output from the Rand mines will have reached a total of 6,500,000 ounces, having a value of, say, £26,000,000. With such figures as the foregoing before us, we cease to be surprised at the steadily increasing quantities of mining machinery which are going out to South Africa. It looks as though plenty of further orders are in store, since a great deal of crushing and other treatment is required with the Rand ores. They vary in richness, but the average is not high, the total yield in bullion from thirty-seven companies during 1894, both from crushing and from the cyanide process, being 13.8 dwts, of cash value of 47s. 6d. per ton of ore crushed.

American Artistic Hardware.

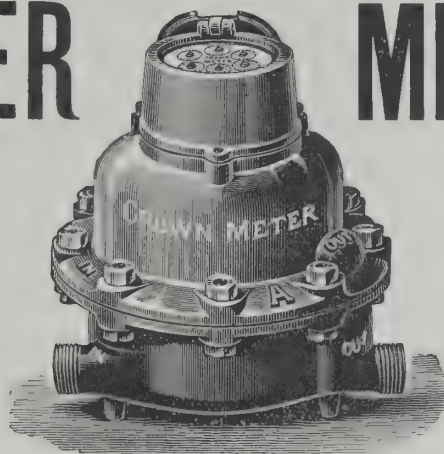
IN every branch of hardware, from a door-knocker to a parlor stove, and from a can-opener to a family kettle, the effort at artistic effects is manifest. In the furnishings of a home or a hotel, an office or a store, and wherever modern hardware is represented, this adornment is noticeable. This is of course in keeping with public taste that in all manufactured products insists upon the same ideal.

If we could compare more easily the hardware in common use with that of 50 years ago, the contrast would be nothing short of a revelation. It is true that in some products solidity and strength have been sacrificed to appearance, and that it is a common practice with some manufacturers to disguise inferior material and imperfect or cheap work under an elaborate and deceiving exterior. The fact, however, remains in spite of its occasional abuse, that to secure the patronage of the public, its artistic taste must be met. Where it is made supplementary to good honest work, reliable material and real value, we have one of the secrets of a successful business.—*Age of Steel.*

CROWN, NASH, : GEM : AND : EMPIRE WATER METERS.

154,000

In Actual Service at the Present Time.



154,000

In Actual Service at the Present Time.

YEARS OF EXHAUSTIVE SERVICE IN ALL SECTIONS OF THE GLOBE HAVE DEMONSTRATED THE
ACKNOWLEDGED SUPERIORITY OF OUR METERS.

NATIONAL METER COMPANY,

DECEMBER, 1895.

298 Broadway, New York, U. S. A.

Lumber Cutting Machinery

OUR SPECIALTY.

UNBREAKABLE STEEL

SAW CARRIAGES

In Several Sizes.

This cut shows one
long seat and set works
of a No. 4½ Carriage.

Complete Carriage has
3 log seats opening 40
inches from saw.

No. 5 opens 50 inches.
No. 6 opens 60 inches.

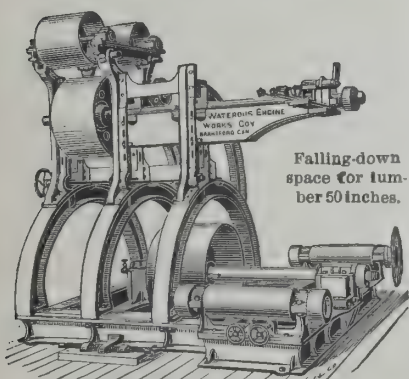


Fig. 33.—No. 4 Saw Frame.

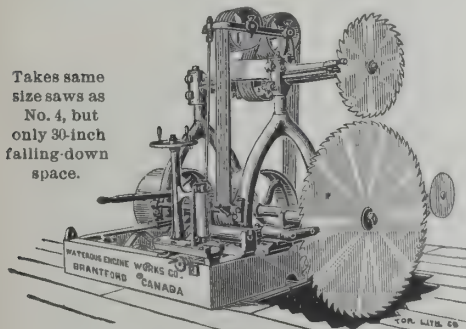
Takes up to 72-inch lower and 40-inch upper
saw.

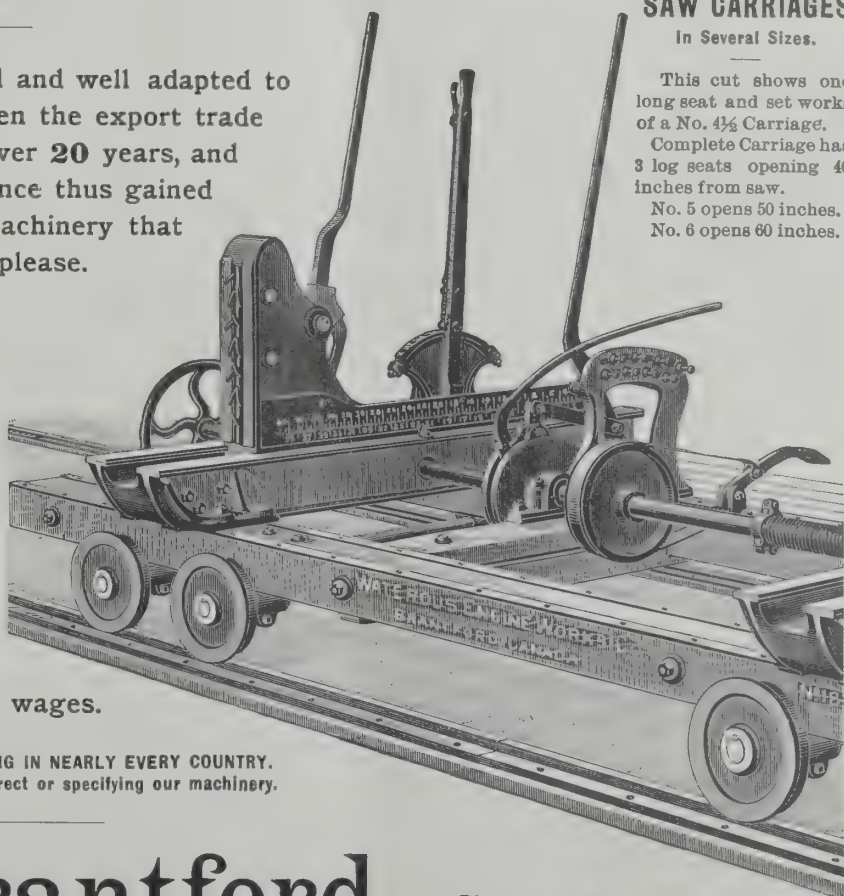
Fig. 32.—No. 3 Saw Frame.

Our machinery is practical and well adapted to
its work. We have given the export trade
special attention for over 20 years, and
through the experience thus gained
we can furnish machinery that
is sure to please.

SEND FOR ILLUSTRATED
CIRCULARS AND
PRICE LISTS.
ALWAYS STATE WORK TO
BE PERFORMED.

Plans furnished to
erect by experts of
long practical experience,
furnished to
erect and run our machinery
at reasonable wages.

OUR SAWMILLS ARE RUNNING IN NEARLY EVERY COUNTRY.
You run no risk ordering direct or specifying our machinery.



WATEROUS, Brantford, Canada.

American Tin-plate Industry.

A CABLE dispatch from Wales stated that the tin-plate operatives of that country, who were said to be suffering severely from the loss of the American trade, had petitioned the Welsh makers of black plates, which were said to be so largely imported by our manufacturers, to suspend their production, thereby compelling the trade here to import the tinned plates.

According to the latest advices in the possession of *Tin and Terne*, the organ of American tin-plate manufacturers, there are at present in operation in this country 33 plants rolling black plates to be made into tin or terne plates. These plants have an aggregate of 155 black-plate mills in operation. Six plants are at present putting in additional mills to the number of 18, while there are four new plants actually in process of construction, with an aggregate of 17 mills, making a total of 37 black-plate plants, with an aggregate of 190 mills. There were 37 coating establishments building or in running order to make tin and terne plate for general or special consumption, not, of course, including stamping concerns where the coating is added after the article is shaped. Many of the existing plants contemplate enlarging, and several new plants are projected, but in neither case have contracts been let.

This statement shows the trade in both black and tin plates to be in a very satisfactory condition. The request of the Welsh operatives that the manufacture of black plates in that country be discontinued seems to have been made under a misapprehension of the facts, as is made evident by the above report that there are 38 American plants rolling black plate, having an aggregate of 155 mills in operation, and that six of the former are adding 18 mills for the making of the black plates, while four new plants are in course of construction, which will add 17 mills to those already engaged in the manufacture. The total number of black-plate plants will therefore soon be 37, with an aggregate of 190 mills. Should the industry grow at this rate, our manufacturers will, in the near future, apparently have no need to import either the black or tinned plates; they will get all they want at home. The condition of this new industry proves not only the enterprise of the American manufacturer, but his ability to adapt his energies to changed conditions. He did not want the duty on the foreign product reduced, but it having been reduced, he at once adapted himself to it, and so successfully as to increase a trade which it was feared would be destroyed by the Wilson-Gorman tariff. It has not been destroyed; on the contrary, it has grown vigorously under what were thought to be impossible conditions.

Primacy in the Iron and Steel Markets.

THE impulse of trade is not so much from the virility of ambition as from the force of resources. Where these are in prodigal abundance, with the facilities of production on equal terms, it is but a question of time when, as one nation outclasses another in these conditions, it will establish its supremacy. It is by these hydraulics the upper level of trade is reached. It is by this law, and by this law alone, that the primacy of the United States in the iron and steel industries of the world is assured. No one can deny the inexhaustible nature of its resources, nor the fast rising tide of its productive abilities. In the anticipation of more prosperous times and under the initial impulse of a revival of business, the present activities in the iron and steel industries of the United States have a marked significance on its future. The eventual results it needs no prophet to announce. Its force means expansion. Home demand is, of course, an increasing absorbent. It is hardly yet beyond its fringes. This has by no means reached its majority. Production, however, is forcing its hands, and at its present rate it must sooner or later overlap its home lines. The market then goes beyond its sea limits. It must export to maintain its activities. The break in the dam is already showing itself, and in the iron and steel industries, as in its superabundance, they must have an outward flow or stagnate within. The process has made its initial move. In iron and steel and their manufactured products exports are gradually increasing. The edge of the wedge anticipates its helve, and it is not unreasonable to assume that the one will follow the other. In Great Britain, with less resource and less output, the export trade in the lines mentioned totalizes at about \$100,000,000. We are not yet half way in this enormous aggregate, but we are moving over the old line. We are not of those who imagine that the iron and steel industries of the United States will ever monopolize the markets of the world. There is coal and iron enterprise, aggressiveness and ability elsewhere, and no one finger on the human hand has to be taken off for the special benefit of the thumb. It is idiocy to suppose such a freak in economic laws. It is, however, a foregone conclusion that, according to all laws that are potential in supremacy, that the United States is destined to be a leader, though never an assassin, in the iron and steel industries of the world. Its present rate of export can be easily multiplied if the requisite energy is shown in developing its foreign trade.—*Editorial, Age of Steel.*

AN iron trade paper of Australia says the British manufacturers are suffering in that country from American competition. Australian dealers in tools say American saws, hammers, axes, chisels, drawing knives, etc., are "lighter, neater, equally strong and durable." The American maker, they say, "picks lawn mowers so there cannot be any mistake in putting the machine together;" not so the British maker; the same remark is made of American and British stoves. The British goods, say the Australian merchants, are solid and honest, but do not "sell themselves" as American articles do; and yet the feeling of loyalty to Great Britain in Australia is very strong.

American Electrical Machinery in Japan.

ADVICES from Japan in treating of the omnipresence of electrical devices in that country make special note of the extent to which American machinery is in favor. At the electrical generating station of the Lake Biwa-Kioto canal twenty 120 horse-power Pelton water-wheels are installed. They are belted with Edison, Thomson-Houston and Brush dynamos, with countershafts between them. Lately a three-phase dynamo of Siemens & Halske has been added. The work of this plant is extremely interesting, and the installation shows how keenly alive the Japanese are to the possibilities of electricity. The canal, which provides the water power for the generating station, is crossed by several bridges. Near the water-power station is an incline along which boats with cargo are moved up and down on wheeled cradles. The cradles are hauled by steel ropes passing around a drum, which is worked by electricity from the power house. This peculiar adaptation is made necessary by the descent of the canal at this point, 118 feet in 1,818 feet, to the level of the city. The gradient of the canal incline is one in fifteen. Double lines of railways, consisting of flat-bottomed steel rails, are laid on wooden sleepers. The gauge is 8 feet 3 inches. Two cradles, each with eight wheels, are so arranged that one goes up while another is descending. The width of the boat is 7 feet, and the length 45 feet. The weight of the cargo is from 10 to 15 tons, and the time of the passage of the cradle is about 12 minutes. Not only are the cradles moved up and down the canal incline by the electric motor, but the electric power is used for spinning, weaving, in the manufacture of clocks, watches, needles, oil, lemonade, ice, soda water factories, rolling mills, rice mills, and for pumping water for the innumerable bathhouses which are situated within a radius of two miles from the power station. Besides these, the station supplies electricity in the daytime to the Kioto Electric Railway Company, and at night to the Kioto Electric Light Company. The cost of the power ranges from \$20 to \$60 per horse-power per year for daily rates of 12 hours; for 18 hours the increase is 30 per cent., and for 24 hours it is 50 per cent. If any one has the idea that the Japanese are children in the field of industry he may safely be said to be in error.

Foreign Markets for American Machinery.

THE American machine is destined to be the pioneer of American foreign trade. It is the missionary of a new nation. Nothing advertises the progress and aptitude of any people more forcibly than the ingenuity and efficiency shown in the tools and appliances used in its manufactures. It may be an auger or an engine, an axe or an electric motor, a parlor organ or a threshing machine; but, be it what it may, cheaply or costly, simple or complicated, it has its related influence on the building up of a foreign trade. An American street car in Europe, a Baldwin locomotive in Russia, a mining drill in Africa, a reaper in Australia, or a plow in Egypt, but whatever its purpose and wherever its use it is an object lesson of American ability and methods. There can be no question as to American eminence and leadership in this line. It is so accepted where prejudice does not color judgment, or affect the candor of an honest admission. Now, while this does not deny the claims of competitors to special merits in certain lines, or justify an exaggerated idea of American skill, it is nevertheless a potent factor in its foreign trade. It would be idiocy to assume that mechanical genius is the exclusive monopoly of any one nation. It is pretty freely distributed and always will be, and it is well for this fact to be remembered, if we would continue to hold our own with active and aggressive competitors. As the situation now stands, the opportunities for the American machinery trade were never so bright and broad as they are to-day. In Europe the field may be limited, but in the newer and more backward countries there are no such restrictions. In South America, with its railways yet to be built, its mines waiting for the pick and the drill, its raw products waiting to be worked up into commercial uses, and its populations waking up to new ambitions, the American machine has a future market of huge proportions. In countries tributary to the Pacific, in China and Japan and fringes of Russia, and in the Australasian empires, being slowly but permanently built up of English-speaking peoples, the possibilities of American trade are practically limitless. In all these the American machine is the entering wedge of its future foreign trade. The gate is open and the opportunity free-handed, and if we read the signs of the times aright, the American nation is in the throes of a new commercial birth.—*Age of Steel.*

Aluminum for South America.

W. R. GRACE & CO. have sent a consignment of aluminum manufactured articles to their house in Peru. The introduction of aluminum utensils and novelties in Southern countries will mean more to American manufacturers than is apparent at the present time. We have the best facilities for reaching South America and can undersell the Germans, French or English in certain lines. It may be that trinkets and some novelties can be made cheaper abroad, owing to the small wages paid over there, but the cost of transportation will be heavier than from this country.

Another field that will develop very rapidly when a start is once made is to be found in Japan and China. At the present time there is said to be only one house in China making any extended use of the metal. The progressive firms in the United States who first reach the new sections of the East will reap the benefits. The remarkably rapid increase in the aluminum business here is already bringing inquiries about the metal from consuls located here.

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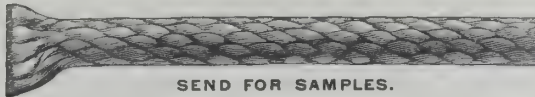
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SAMSON BRAND.

SAMSON CORDAGE WORKS, - - Boston, Mass., U. S. A.

Stanley's Wrought Steel Shelf Bracket.

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The result of long and careful
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A PERFECT BRACKET!

Much superior to anything else in the market.

Light! Strong! Elegant!

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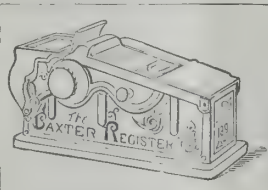
At one writing makes 3 bills (5x4 3/8 inches), two coming out of machine while triplicate is retained inside under lock and key. Thousands in use in every line of trade. In retail business top bill with firm's name printed on can go to customer, second to cashier, third copy retained inside for proprietor's use.

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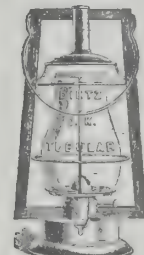
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The above illustrations show three of our principal No. 0 Tin Tubular Lanterns. They are all well made of the best materials, with extra quality globes and burners. The oil funnels are drawn from single sheets of tin, and afterward retinned. They are fitted with the latest and best devices for moving the globe out of the way for lighting and trimming.

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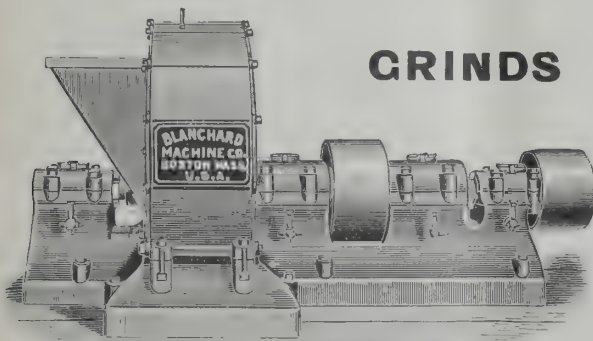
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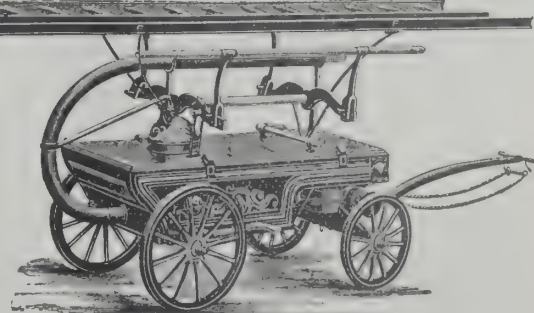
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Also 1,500 varieties of
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Power of Ocean Tides—Electrical Transmission.

AMERICAN invention comes to the relief of exhausted coal fields by devising a method of transmitting the power of ocean tides. The device is described exultingly and in detail.

Those who suffer from anxiety lest the spread of industry should be bringing us near the end of the world's fuel supply will hear with relief of a device by means of which the everlasting strength of the tides has been put under contribution to drive man's factory wheels. We know that Niagara is in harness; but, then, only one country has its Niagara to fall back upon in case its coal measures and its petroleum beds should give out. Nearly every coast, however, has its tides, rising and falling with the power of many Niagaras, and waiting for the yoke of industry. At Bower's Cove, East Providence, Rhode Island, U. S. A., Mr. John Wilde seems to have successfully induced the ocean to render up a part of its strength in practicable form. A small cove, or bight, has been inclosed by a dam across its sea front; another dam, nearly at right angles to the first, runs backward to end of the bight, thus dividing it into two reservoirs. At the intersection of these divisions is the power wheel, made on the undershot principle. Starting, at low tide, both reservoirs will be empty; and, as the tide flows, it is admitted under the wheel, turning it as it comes, into reservoir No. 1. When the time of slack water is near, and the tide nearly full, the sea gate is closed. Another flume, or duct, is then opened, the water pours from No. 1 again under the wheel into No. 2, as yet empty. This flow continues for three or four hours, by which time the tide has fallen considerably. Then the gates between the two reservoirs are closed and another is opened, allowing the water from No. 2 to flow under the wheel, emptying outward into the sea. This continues until the tide begins to rise again, when the process is repeated again and again indefinitely. The power wheel is arranged on floats and adjusts itself so as to get full advantage of the flow beneath. The ducts are so arranged that the flow is always in one direction and the wheel's motion is never reversed; all the changes spoken of are made automatically and without stoppage. The invention is called "Wilde's Unlimited Tidal Wheel."

White Lead Produced by Electricity.

MANY short processes have been devised for the production of white lead, but, as a rule, they have failed to produce a pigment equalling that made by the slow Dutch method. This method requires several months for its completion, large works and the product is therefore proportionately expensive. Could the various steps be made quickly, so that as fine a quality could be turned out in as many days as months are required by the old method, the cost would be greatly reduced. That such a method would therefore have a great value will be at once evident. Mr. R. P. Williams, in a paper read before the American Chemical Society convention, describes an electrolytic process invented by Mr. Arthur G. Brown. This process, as he describes it, consists of our reactions: First, the electrical preparation of nitric acid and sodium hydroxide; second, the action of nitric acid on lead, forming lead nitrate; third, the reaction of lead nitrate and sodium hydroxide to form lead hydroxide; fourth, the combination of lead hydroxide and sodium bicarbonate to form lead carbonate. To produce these reactions, the electric current is used. Pig lead is used, as it comes from the furnaces; impurities are removed in the process, and the result is said to fully equal in every respect white lead made by the old method. Samples of the electrolytic and of the Dutch leads were exposed side by side for two years to the extremes of weather and other trying tests, but no difference would be detected between the two. Lead carbonate appears in two forms, the crystalline and the globular forms. The former will not absorb oil to anything like the extent of the latter. Other properties also cause the use of the one and the disuse of the other. The electrolytically produced white lead is of the globular form, and, it is claimed, is in an even more finely divided state than that produced by the Dutch process. If this new electrical process is the success represented, electricity will again have revolutionized old and established industries, and added to the wealth of the world as modern inventions and discoveries are constantly doing.

A Universal Condition of Progress.

THE recent visit of British iron and steel workers to Belgium and Germany has made it manifest that where the best and latest labor-saving machinery is used, the odds are against those who are content with antiquated methods. Great Britain is certainly not behind in the devising and manufacturing of ingenious machinery, but it has to be confessed that it has not had the home appreciation it deserves. This is not without its practical lessons here as elsewhere. There is no halt in mechanical progress, as every manufacturer knows. What is first to-day is second to-morrow, and the constant changing of machines is one of the most serious costs of modern production. It has, however, to be carried as one of the iron laws of successful competition.

T. H. McALLISTER, 49 Nassau street, New York, has recently issued a condensed catalogue of his optical goods, such as microscopes, telescopes, stereopticons, magic lanterns, operaglasses, field glasses, eyeglasses, &c., &c. Having complete illustrated catalogues of such goods in different languages, he is in a position to intelligently supply intending buyers with any required information concerning optical goods. The house of T. H. McAllister, established over one hundred years ago, is regarded as headquarters in America for such goods.

Energy of American Invention.

THE activity of invention is without relapse, and in this age is more marked than ever. In fact it never tires. It has its spurts of course, as new directions open for its ingenuity. These may be in logical sequence to such epoch-making discoveries as steam power and electric energy; some new application of mechanical laws or forces, or in the persistent and never-halting demand for labor-saving appliances, but be the impulse what it may, scientific or economic, the current, no matter its course, is incessantly in motion. No observer of the constant changes in a machine shop can question the perpetual movement of invention. It has no vacation in its vigilance, and is seldom or ever blind to its opportunities. In every department of industry, from cutting a log to planing a plank; from a gimlet to a drill; from a wagon brake to that of an express train; from an iron casting to a steel shaft; in spinning cotton and crushing sugar cane, and in making a nail or a submarine cable; in short, everywhere and in everything modern inventive genius is the vital breath of industrial success. It may be overdone and in some cases it may precipitate serious disturbances in the equilibrium of labor, but in its total results it is helpful as it is irrepressible and necessary.

In the report of the United States Commissioner of Patents to Congress for 1894 we have a statistical statement that is both interesting and significant. It is an affidavit to what has been said on the ceaseless energy of invention. In the year named 36,987 applications were made for patents; 95 for reissues; 2,286 caveats; 2,053 applications for registration of trademarks and 371 applications for labels. There were 20,803 patents granted, including designs; 64 patents reissued and 1806 trademarks registered.

The total expenditures were \$1,100,047.12; receipts over expenditures totaled at \$87,892.46, the balance to the credit of the Patent Office in the Treasury of the United States amounts to \$4,369,135.91.

Foreigners Want American Shoe Machinery.

A LARGE shoe machinery dealer says in regard to the demand for American shoe machinery in foreign countries: "We are doing at the present time a very large business with foreign shoe manufacturers who desire to purchase American shoe machinery. It is a fact that the machinery made in this country for use in shoe factories is so far superior to anything which they produce abroad that there is no comparison between them. The foreign machinery firms copy our devices, and sell them to a considerable extent in their own countries, but these imitations are all very clumsy, crude affairs, and none of them have the little fine touches which are so essential to the production of good work, and which are always to be seen in the American-made shoe machines.

"I find that shoe manufacturers in England, France, Germany and Canada buy American-made machinery rather than the home production in this direction, and that they will wait for delivery of our goods, and that, as in the case of Canada, they will pay a duty of 30 per cent. rather than use the foreign shoe machinery. Yankee inventors always keep ahead of foreigners in this work. If they see one of our machines which they think is worth copying, they will do so as well as they can. As I said before, it does not by any means come up to the original, and even then, by the time they get the copy fully completed, our inventors have a new machine in the market which is an improvement on the old one. In this way we always keep from six months to six years ahead of the foreign production of shoe machinery. They have no show whatever with any shoe manufacturer abroad who has ever seen any American devices in this line and desires to be up with the times in his work. You can say that the foreign demand for American machinery at the present time is larger than ever before, and that it constitutes a very important part of the business which Boston firms are doing at the present time."—*Boot and Shoe Reporter*.

World Record for Low-Cost Iron.

THE United States is foremost in the cost of production and volume of output of iron and steel. We passed all competitors in the size of our exploitation, five years ago, says *The Tradesman*, and we have been making both pig iron and steel billets, at less net cost per ton, than they are made anywhere else, since 1892. A test, on a broad basis, showed that pig iron was produced in the South, out of many of the best furnaces, in May last, for \$5.30 per ton. This cost has never been reached in England, by say \$1.50.

Billets sold, from standard mills, round \$15 a ton last winter, for nearly two months, and the mills lost no money on the sales. Of course these cost prices were made in a time of abnormal conditions, when stringency was prevailing in all lines to the cutting down of wages and the price of all the crude materials for furnace and mill, so the low cost merely shows that our masters have learned the art of reducing cost to bedrock, and are hence able to meet any possible prices English or Continental masters may put upon their products. In variety of high grade iron and steel goods the United States are behind those countries that have been training their mechanics and perfecting their processes, for a thousand years; but this can be only a temporary condition.

The progress of the country in late years shows that it will have captured all worth knowing of the mechanism and chemistry of the iron trades in another quarter century.

—Our English friends must at least acknowledge that in sand-papery machines American manufacturers lead the procession. Some of the largest concerns in Great Britain use American-made sanders.

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They are TOUGHER and STRONGER than the OLD STYLE Milled Drills.

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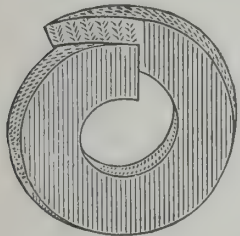
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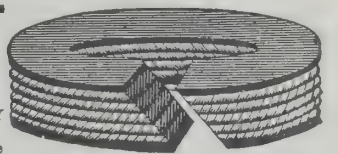
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Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY
PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None
genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

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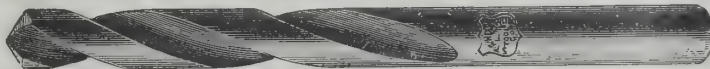


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The STANDARD TOOL COMPANY, Cleveland, Ohio, U. S. A.

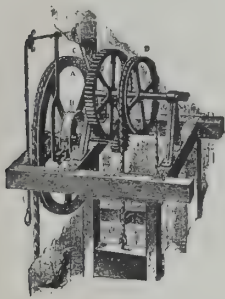
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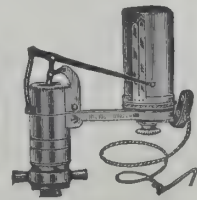
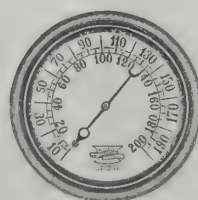
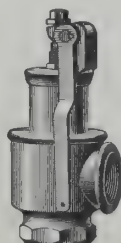
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An Age of Wire.

THE production of wire represents an enormous industry, and there seems to be no end to its new and varied forms of service. In methods of manufacture, as well as in its multiplying of uses, intelligence and ingenuity are constantly improving the article. It can be cold rolled to any degree of fineness, and this at a cost making it more easily and cheaply available for consumers. In its qualities of flexibility and strength it is distinctly fitted for such uses where these characteristics have to be associated with lightness and cheapness. This is noted in the roofing or covering in such large spaces as are found in railway depots and market places. Here the web of wires is the metal anatomy of a weather proof and translucent covering of glass or other substances. It can be semi-transparent or opaque, and made artistic as well as useful in this use.

In fencing in the huge fields and ranches of the West it has saved both the agriculturist and the cattle king heavy expense, and where the wooden fence is positively unobtainable it has supplied its place. In this use alone it has developed into a gigantic trade, giving employment to thousands of men.

In the telegraph system that now interlaces oceans and continents, and networks the planet with its silent wires, and brings the great family of nations into direct and almost instantaneous communication, we have an age of wire.

In the electric and cable street car systems we have the same ubiquitous article, while in the telephone, stretching its metal threads along the streets of our cities, we have an added and increasing use of wire. It is also being used in the manufacture of artillery and in the rigging of ships. It forms the cage in which the canary warbles when living, and also the framework the taxidermist uses in preserving it when dead. It is a protection and a trelliswork in our banks and business offices, and also furnishes the door mat on which the mud is left by the pedestrians' boots. In short, its uses are innumerable and seemingly ever-increasing. It may be truly said that this is an age of wire.—*Age of Steel.*

Uses of Electric Energy.

SOME interesting facts of late development of the electric storage battery, in whose perfection lies the hope of emancipation from electric-light wires, trolley wires, and other unsightly obstructions, have recently been published. The storage battery has reached a point of perfection as shown by an exhibit in Philadelphia, which makes it a commercial possibility, and promises a large extension of the usefulness of electricity in everyday life. With a further development in the direction of cheapness, it may be possible to reproduce, in towns unprovided with cheap means of motive power, the conditions existing in Great Falls, Montana, U. S. A. In that town electric power produced economically at a water privilege does all the mechanical work. It propels, lights and beats the street cars, runs the elevators, the printing presses, the cranes, and all kinds of machinery, and is used for pumping, for excavating, and for rock crushing. It is even applied in the building trades, it not being unusual to see on the streets a mortar mixer attached to an electric wire leading down from a pole. The restaurants cook by electricity; the butcher employs it to chop his sausages, and the grocer to grind his coffee. The housewives run their sewing machines and heat their flatirons by electricity; they bake their cakes in wooden electric cake ovens that can be set away on the shelf like pasteboard boxes. They have electric boilers, broilers and tea kettles.

The Niagara Falls Water Power Company is pressed with demands for the electric power they generate and distribute. They have now in use two turbine wheels of 5,000 horse power each. Three more will be justified in the very near future, making a total capacity of 25,000 horse power. If this enormous amount of energy may be stored for use at any point the user may need it, at rates equal to the charge for steam power, it will work a revolution. No doubt about it.—*Editorial, The Tradesman.*

Growth of American Exports of Iron and Steel.

AUGUST, 1895, developed a most interesting and important feature relative to the iron trade, the exports for that month being at a rate that presaged a year's business in this line some 29 per cent. larger than the largest year's trade yet recorded. The sales abroad, too, were made on a fairly high range of prices in the home markets, a thing scarcely to be expected. The advance in values of raw material has not reduced the sales of American machinery in foreign centres, locomotives, tools, machines and the like going out and selling with a regularity and rapidity that appear to indicate that the United States will be the greatest exporter of iron and steel in the world in time as it is now the leading producer of these essentials. The following table, showing exports in iron and steel for the last ten fiscal years and for the first two months of the new fiscal year, is comprehensively suggestive:

1886	\$15,745,569
1887	15,958,502
1888	17,763,034
1889	21,156,077
1890	25,542,208
1891	28,909,614
1892	28,800,930
1893	30,106,482
1894	29,220,264
1895	32,000,982
July, 1895	2,670,721
August, 1895	3,411,385

If the remainder of the fiscal year maintains any such average of advance as July and August, our exports will be some ten millions beyond any year of the past, or at the rate of \$41,000,000.

A South African Industrial Exhibition.

IT is too tame and slow to say that the world moves. It whizzes and hums all through. A great International Industrial Exhibition is announced to be held in May or June next at Johannesburg, South Africa. The months named are the winter months of the southern hemisphere, and the weather there at that season carries no suggestion of discomfort. Johannesburg, it may be noted, is at this moment one of the most go-ahead places on the surface of the globe, and is fully up to date. The success of this exhibition cannot be doubted. The population of the Rand, as the district is called, are a pleasure-seeking and an amusement-loving people. They make money rapidly, and they know how to spend it. The preparations for the exhibition are well under way, and the exhibition is to be carried out upon a liberal scale. The government of the South African Republic is in hearty sympathy with the undertaking, and President Kruger is to be also the President of the exhibition, with working committees of influential men. Numerous applications are pouring in from Natal and Cape Colony, and British and American exhibitors are to be largely represented. The various railways of South Africa have promised their co-operation and assistance, with special excursion arrangements and facilities for the transport of exhibits. The chief departments of the exhibition will be the displays of mining and of agricultural machinery. As to the mining exhibit, it goes without saying that the Johannesburg exhibition will be unique so far as South Africa is concerned. Mining and milling plants of every description will be on the ground, and in every possible way that the industry can be represented on such an occasion it will here be in evidence. Everything is to be done to encourage to the fullest possible extent an interest in the agricultural development of the country, as it is felt that that industry has not as yet received in the republic the attention which it deserves. The mining industry has brought a great settled population, and agriculture cannot now fail to attract the attention of many desirous of finding fresh and paying openings for their enterprise and capital. In both of these lines American exhibitors must be intensely interested, vast quantities of American mining machinery being already in operation in that region. All the other departments of a full-fledged universal exhibition are to be in full blast, even a special South African loan exhibition, and, by the courtesy of the government, a collection of historical relics. Altogether, the forthcoming show promises to be a great event and productive of a vast amount of good in the general dissemination of knowledge, and the quickening and broadening of industry.

Wire-Wound Guns.

IN the various steps taken by the United States toward providing a satisfactory defence of our coasts against attack by foreign war ships there has been a peculiar hesitancy in adopting the latest devices, quickly followed by an extraordinary advance beyond the results obtained abroad.

Thus, we long delayed the adoption of breech-loading, rifled guns, but very soon after we decided to use them we had no superiors as gun builders. Similarly, although nickel-steel armor was first manufactured in Europe, the high development that has been given to it has been due to the Navy Department of this country.

Recently Great Britain, being convinced of the value of the wire-wound gun, has discarded the built-up system of manufacture, and has constructed all the heaviest guns for her latest battle-ships on the wire-wound plan.

The United States navy and army ordnance experts have not yet fallen into line, but when they do there is no doubt that our wire-wound guns will surpass those now building in England by as much as our Harveyized nickel-steel plates surpassed the compound armor that so long was regarded as the best the British works could make.

Already the extraordinary endurance and the unequalled power of the Brown segmental wire-wound gun have begun so attract attention abroad. Its construction in this country will soon set the pace for gun construction throughout the world. It has no equal.—*Editorial, New York Herald.*

American Electrical Apparatus in South Africa.

AMERICANS are ahead on electrical appliances, both as to ingenuity of invention, facility in operation and success in results. Our electrical machines are being sent all over the world, and find none better nor any so good in most cases. A recent instance of how our electrical success "carries" is given in the establishment of a plant for lighting Bulmony, in South Africa. It was an African kraal two years ago, under the rule of King Lobengula, but is now a fast modern city, built on the top wave of invention, with every "improvement" known to science and some never seen before. Among the first things needed was a lighting plant, and an American company, with some blue-print pictures of its products and a good reputation, won the day in the competition against all contestants and established its system there, and now apparatus that was built in America is brightly illuminating the new home of civilization in southern Africa, and advertising nightly the skill and enterprise of the United States. Hitherto the field has been a European appanage, but is rapidly becoming an American commercial centre. It is worthy of note that in this plant not only the dynamos and lamps, but the boilers and engines are all of American make.

And not only have we "beat the band" in electrical apparatus in Africa, but the same is true of China, Japan, Mexico, Central America and other far-off lands.



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Full directions, in various languages, accompany each bottle of our medicines.

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For the rapid cure of Diseases of the Throat and Lungs.

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For purifying the Blood and the cure of Scrofulous Diseases.

Ayer's Ague Cure,

Warranted to cure all Malarial Disorders.

Ayer's Hair Vigor,

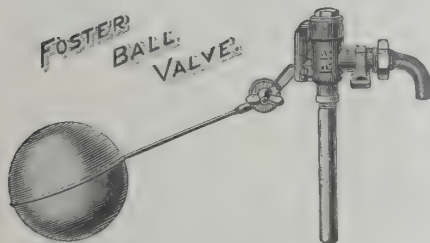
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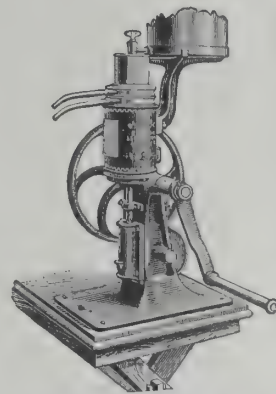
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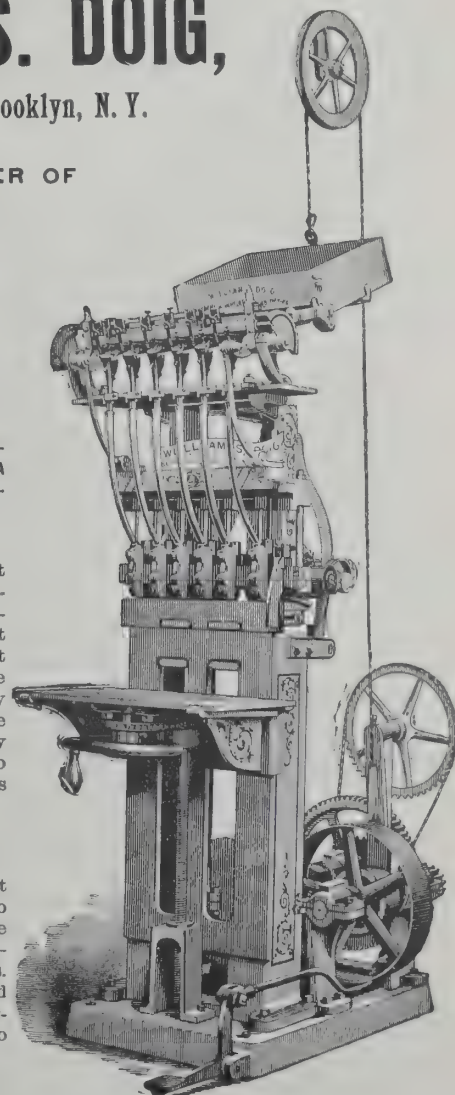
THESE BOX-NAILING MACHINES RECEIVED THE MEDAL AND DIPLOMA OF THE WORLD'S COLUMBIAN EXPOSITION, CHICAGO, 1893.

When I say that I am the largest manufacturer of nail-making machinery in the United States; that my machines work automatically with great facility, and that the feeder does not require any one to attend it, I have proved it to the satisfaction of my customers. I am continually on the alert for improvements, and with my increased facilities I am prepared to meet the requirements of the times in

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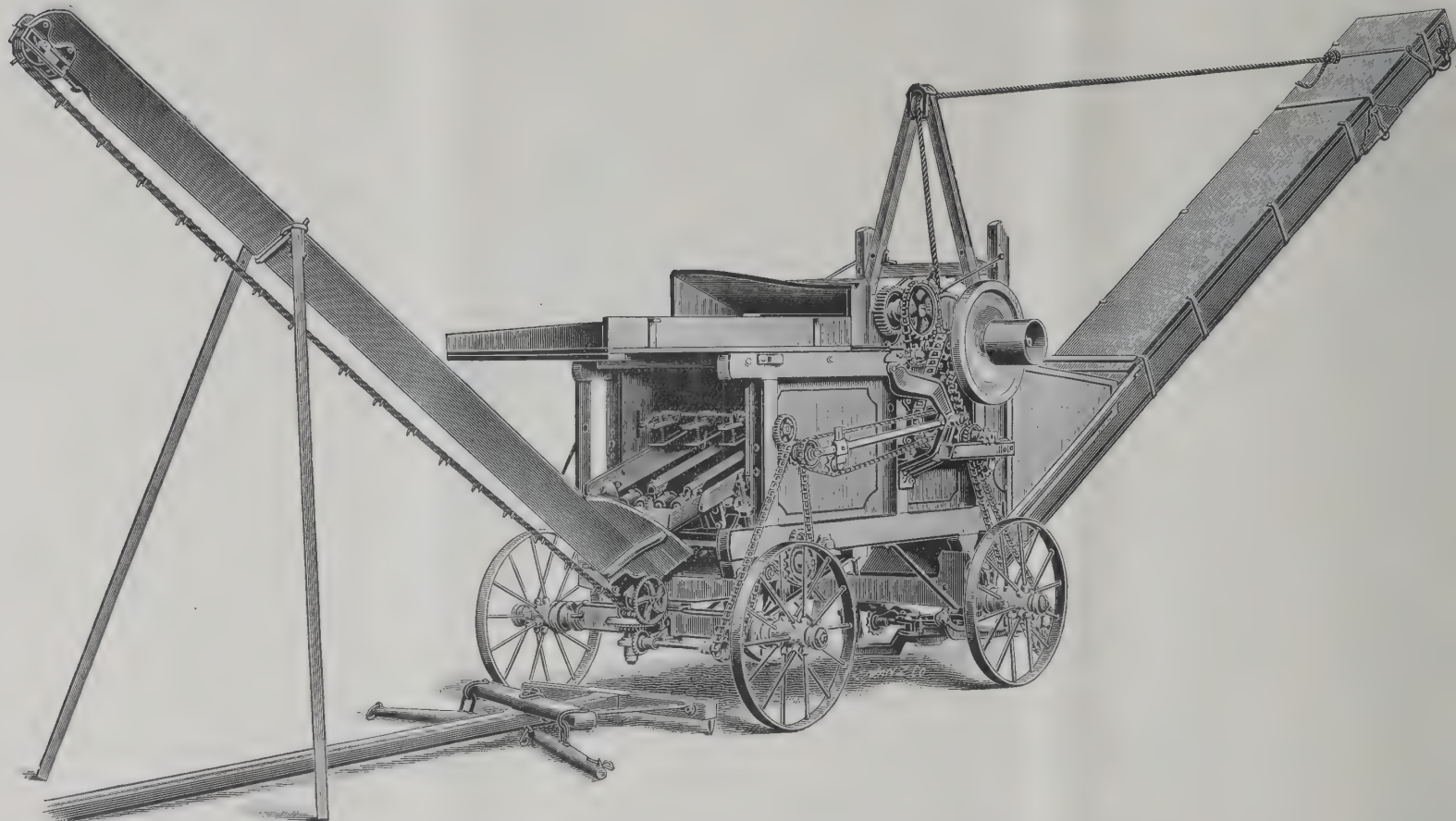
I call attention to one of my latest machines illustrated herewith, and to the fact that I have machines complete for cleating and also for nailing bottoms on cigar and lock-corner boxes. Foreign users and buyers should send for my catalogue, which gives full particulars, and which I will be pleased to send free to any address.

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Used in the United States, Mexico, Central America, Chile, Uruguay, Argentine. It is strong and durable, and does excellent work. Shredded fodder is best. Send for full description and Export Price List.

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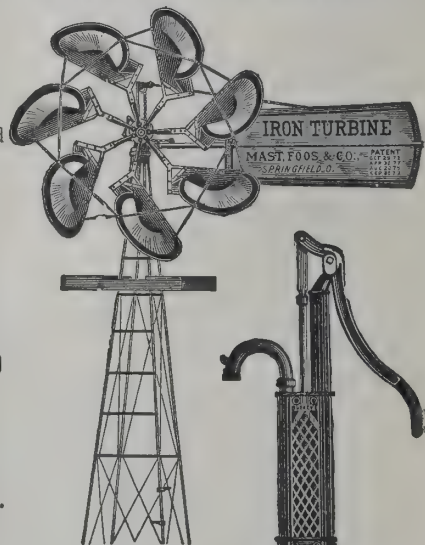
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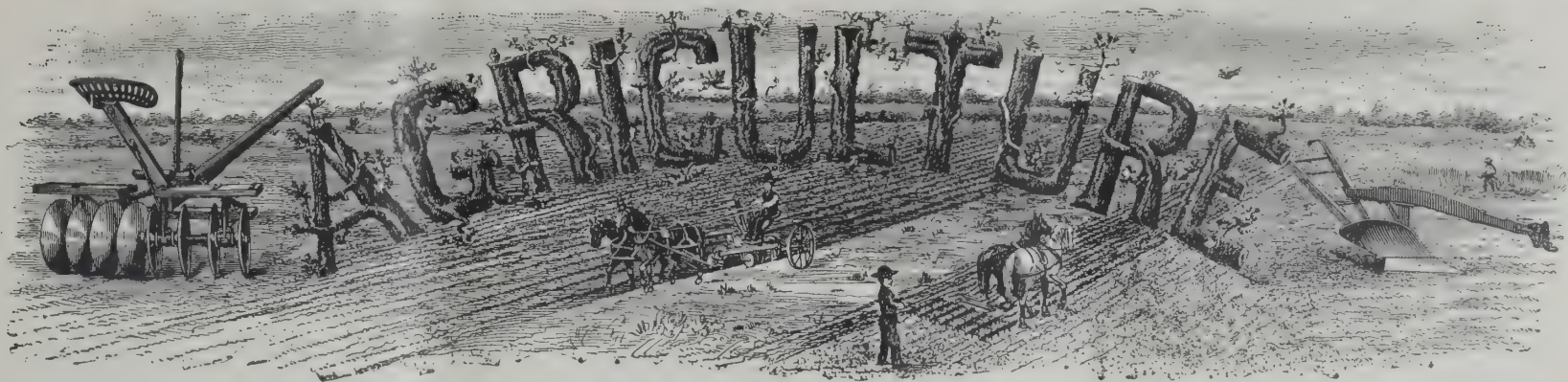


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Works easy and throws a constant stream. Has Porcelain-lined and Brass Cylinders. Is easily set. Is the Cheapest and Best Force Pump in the World for Deep or Shallow Wells. Over 300,000

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Increasing Use of Wind Mills.

IT has been estimated that the 100 wind-wheel manufactories of the United States have sold considerably more than half a million wheels, and some individual firms count their present annual output by the tens of thousands. We probably manufacture more wheels in a couple of years than are at present in use in the whole of Europe.

Even with this enormous present usage, the use of the wind wheel as a motive power is still in its infancy. The reason of its long delay in being generally introduced has been the cumbrousness of the great wind wheels of Europe; but Yankee ingenuity has given us such neat, compact and handy wheels that they are easily put up or taken down, and are most applicable for private family use. They are self-adjustable, and do not easily get out of order. There can be no doubt about the wind being the prime motive power of the future for all kinds of stationary work in the rural districts. Such work as wood-sawing, churning, pumping water, grinding feed, etc., which need not be done at any specified hour, can be, and is, done by the wind wheel. In the near future, when electricity becomes more widely used as a motor in individual daily life, and storage batteries are used, wind power will be used for generating the electricity, and the force will be available at all times. It is probable that the wind wheels will then become common in cities; the main obstacle to the urban use of the wheels being that in cities time is considered too valuable to wait for a wind to spring up.

We usually look upon the wind as a most fickle phenomenon. So it is, if we consider only short intervals of time, such as a few minutes or an hour, but when we take the total amount of wind for a week or a month it is surprisingly constant. That is, the month of March or August will have about the same amount of wind from year to year.

The wind is stronger, more constant and more uniform at a little distance above the ground than near it, so that in mounting a wind wheel it pays to have it on a higher tower in an open, unsheltered place. There is no reason why a wheel should not be mounted on the top of a large tree which has had the upper part removed.

Superiority of American Over European Corn.

THE results of a recent analysis of maize grown on the the shores of the Black Sea and the Danube by the United States Department of Agriculture will, no doubt, be interesting to the farmers and cattle feeders of this section, as well as a source of great gratification to Americans in general. The analysis was made with a view of determining the value of the foreign product as feeding stuff as compared with the grain grown in this country. These countries of late have been shipping large quantities of corn to England, Germany and other European countries. They have entered into active competition with the American product, and the seriousness of this growing commerce to the farmers of the United States becomes apparent when it is considered that the imports from Roumania alone into Germany exceeded those from America. The geographical location of these countries, their nearness to the European market, the avoidance of a long sea voyage, gave the farmers of these districts exceptional facilities for entering those markets in successful competition with the United States. The experts in the Agricultural bureau were of the opinion that the American article was superior to that of the European product, and that the difference in nutritive value between European and American corn was so great as to offset the transportation advantages which the European corn enjoyed. The results of the analysis seem to confirm this impression, and will aid in scoring a complete triumph for the Americans in their competitive business in the foreign corn markets.

The analysis showed that the best grades of Black Sea and Danube-grown corn corresponded in quality to the very inferior grades of American corn. They were fully 15 to 17 per cent. lower protein and 33 per cent. lower in fat than the average of over 200 samples of American-grown corn. The average for corn of the world shows but 9.45 of protein, and this average is higher than that of the Danube and Black Sea product. The American average in protein is 10.5 per cent.

—In binders, mowers, headers, plows and wind mills, American manufacturers own the trade of South America, and there is no good reason why they cannot do so in all kindred lines.

Berlin Butchers and American Meats.

BERLIN butchers have adopted a resolution condemning American meats packed in borax, not alone objecting to the borax, but conveying the idea that meats so packed were nothing but slop-fed stuff, which under other circumstances would turn black and be otherwise unmerchantable, and that the use of borax, except in such cases, was not in vogue. The fact is boraxed meats are the choicest of the following choice cuts: American short-cut hams, square shoulders, New York shoulders, light picnics, light-side meats, such as Cumberlands, Wiltshire sides and other meats, and they are usually ordered packed in borax. Another reason why they are thus packed is that such meats, to suit such a trade and command top prices, are cured under a special formula for color and mild cure, which cure is completed before the meats are packed, and the borax is used (all salt being cleaned off) to keep the meats at that point of perfection which so much care and attention have been exercised to attain. Some meats are packed in salt before cured, and cure at random in transit simply because there is no other object in view except to prevent their becoming sour, but such is not the case where borax is used in packing and exporting. While borax is not used on all kinds of meat, there is not an exporter who does not thoroughly understand and appreciate its value. All cable codes relating to provisions deal largely with the subject of boraxed meats, and the demand for such meats is great and imperative in England and on the Continent, France excepted. It seems funny that American knackereries can ship horse-beef over to those fault-finders, and they gobble it up without demur, and there is neither borax nor microscope brought into play. The consensus of opinion among those interested is that Germany is a proverbial objector against American products for reasons other than those avowed.

If that country does not want boraxed meat let them do without it, and if they want microscopic inspection let them pay for it; in short, let them do as they please—over there. Several of our foremost houses have borax mills on their premises, and if the English trade keeps on booming there'll be more. No secrecy is exercised in its use, in fact its use is becoming more popular every day. Borax is one of the most harmless antiseptics known, and one of Nature's own manufacture, and certainly is one of the most cleansing articles extant, both internally and externally, as far as the human system is concerned, and a sure destroyer of bacilli, and probably these qualities are the most objectionable to the Berlin butchers coupled with a desire to keep everything American out of Germany, which may ultimately result in keeping everything German out of America.—*Editorial, The National Provisioner.*

Oleophobia in Denmark.

WE referred a few weeks ago to the fact that the dairy papers in Denmark were printing reports to the effect that American oleo oil was being adulterated with horse oil. We said at the time that such statements were too absurd almost to be contradicted or commented upon, excepting to show the degree of animus which foreign competitors are displaying just now against American products.

Writing on this subject, Secretary of Agriculture Morton says: "The charge made by certain Danish butter papers to the effect that the fat of horses is used in the manufacture of oleo oil in the United States is too absurd to require consideration so far as it relates to the product of our reputable establishments in this country. The large beef slaughtering concerns do not handle horses, and it is not reasonable to suppose that they would purchase the fat of these animals to adulterate a product the reputation of which has only been established with much labor. If any oleo oil is adulterated in the manner alleged, it can only be the product of small houses which have no reputation to lose."

In this connection we might say that the poorer the oleo oil the less would be the advantage of adulterating it with horse oil, for the very simple reason that the latter is infinitely more expensive and has a higher commercial value used in its proper channels. Independent of this, we will stake our reputation on the positive statement that no oleo presser, large or small, would resort to such methods.—*The National Provisioner.*

—The Laidlaw-Dunn-Gordon Co., Cincinnati, Ohio, U. S. A., have contracted to furnish a complete hydraulic pumping outfit to a firm in Manchester, England. They shipped last week five car loads of pumping machinery to England and Ireland. Another shipment of similar machinery was also sent to Cuba.

The Present Condition of English Agriculture.

IN another column it is shown that the eminent British statistician, Mr. Mulhall, is calling attention to the enormous waste of labor that is occurring in Europe because farmers are not supplied with the same labor performing mechanical appliances that are in use in the United States. The labor-performing slaves work for a rate of wages so far below the cost of living, where that cost is at the lowest level, that physical human labor is utterly incompetent to compete with mechanical labor. And it don't have to where the economic value of intelligence is properly understood. The machine is the slave of the man. By its labor man rises to a higher level of income and comfort.

The present condition of English agriculture is described as follows by an English farmer in the *Mark Lane Express* for November 18, 1895:

"The county of Kent has long been known as the 'Garden of England,' and though there are some parts which cannot fairly lay claim to this title, there is no doubt it contains a large area of productive land, and in the eastern portion is to be found some of the finest land in the kingdom—land capable of producing seven quarters of wheat and ten to twelve quarters of barley or oats per acre. In part only, however, is it a corn-growing county. It contains an unusually large proportion of pasture land; a considerable area is devoted to fruit, and, as everybody knows, it is the premier hop-producing county. Here, then, it might be supposed, the present alarming depression would not be so severely felt as in districts that are apparently less favorably circumstanced. In Essex, Norfolk, and Suffolk, which are pre-eminently corn counties, we naturally look for disasters in such a time as this; but Kent, with all its natural advantages, might be expected to show a different state of things. Yet what are the facts staring one full in the face at the present moment? Let me enumerate some of them. In the first place, it is beyond all possible question that farmers are abandoning their occupations—not only an isolated case here and there, but in large numbers and in all parts of the county. In the most favored part of the county one of the principal landowners has all his farms upon his hands—not because of any disagreement or a want of disposition to adjust the question of rent to suit the times, but (to quote the reason given by the tenants themselves) because *it would be impossible to live upon the land if they had it rent free*. I have also read that another landowner has as many as fourteen farms without tenants. I, myself, could name three other landlords who each have from four to ten farms unoccupied; and if this is the state of things within the range of one person's knowledge, you may easily imagine what is going on throughout the county, and if there could possibly be a doubt as to the reality of the disaster, we have only to look at the weekly list of bankrupts for conclusive testimony. Our friend 'Stubbs' classifies these unfortunate persons according to their occupations, and I venture to affirm that no man living ever saw so many names under the heading 'Farmers' as have appeared there this year. I remember that at the beginning of last year the fact that in 1894 there had been an average of one farmer per day declared bankrupt. What are the returns of 1895 likely to show? As an indication of what we may look for, I refer to the list for the present week, and find that thirteen farmers have been declared bankrupt, and eleven others have made an effort to put off the evil day by means of bills of sale, which most people regard as tantamount to an admission of insolvency. Thus there are twenty-four in one week who are either bankrupt or next door to it. And from my knowledge of Kent, I grieve to say that not a few of those among my unfortunate neighbors are men of enterprise and skill, and were at one time men of capital, but they have 'gone under,' in most cases after a gallant effort to keep their heads above water. Would that anybody could tell when this tide of ruin will cease to flow. For my own part, I cannot see any prospect but its continuance until the great industry of agriculture is virtually extinguished; and when one reflects upon the far-reaching disaster which all this must entail—how it must cripple trade and destroy labor—I confess to grave apprehension for the safety of the country.

"Do our statesmen realize the gravity of the situation? I fear not, although many of them are landowners. When I wrote that the only remedies spoken of in official quarters are a rearrangement of the burdens on land and the construction of light railways, I cannot resist the impression that the next session, to which so many are looking forward, will only witness a trimming of the fringe of the depression, for these things cannot touch the substance of it. The one thing needed is to enable the farmer's produce to realize such prices as will pay the cost of production, and a little over; and he is, indeed, a sanguine man who can think that facilities of conveyance and a shuffling with burdens on land will accomplish the object desired."

American Bicycles Preferred.

BICYCLISTS coming to Paris will be wise to bring their American wheels with them. They will regret it if they don't. I don't care what make it is, every wheel made in America is better than the best made here or in England. I am speaking from actual experience, not hearsay. And my experience is not compared with my recollection of riding in America, for ex-Congressman Cable brought his wheel with him. After getting completely fagged out, pumping the best make in England and France, I have regained my breath in a few moments after having swapped machines with Cable. Other Americans who have travelled here on bicycles say the same thing. Moreover, bicycles made in Europe, despite their inferiority, cost just as much as those made in America.

—The United States Government has contracted with Gleason & Bailey Mfg. Co. to build a complete fire engine outfit for the proving grounds at Sandy Hook.

English Trade Deceptions.

THE ethics of commerce require honesty in the quality of commodities sold, as well as in handling the proceeds of sales. Trade deceptions rob the buyer as effectually, if not as directly, as the thief who may take cash out of his pocket. Here are a few illustrations:

Great inducements have been made to New York cheesemakers to make inferior goods for British trade, but the quality has been steadily maintained at the high standard established 50 years ago.

Every American manufacturer who seeks trade in Great Britain is asked to adulterate or cheapen his goods for that market. A few months ago a local confectioner who has built up a large trade in London was asked by a customer in that city to use a Belgian earth, which is very heavy and smooth, in chocolate and mixed French cream goods; the use of this compound would have reduced the price 10 per cent. The American refused to use the adulterant and lost the customer, who placed the order in France. The adulterated goods were shipped to London in bulk, to be packed in boxes marked with labels which are counterfeits of the New York maker's celebrated brands. So far back as 1865 William P. Haines, superintendent of the Pepperell Mills, Biddeford, Me., was offered in a dull season by a Manchester, England, firm an order for one million dollar's worth of cloth for the Chinese market, made flimsy, but loaded with lime to deceive the consumers. Mr. Haines said: "We make honest American goods, and we won't cut the quality. We guess the Chinese are smart enough to see that good cloth is better for garments than mosquito netting loaded with clay and lime, and when they find out that we will sell them direct they won't go to England for inferior goods." The Manchester man did not leave an order with the Pepperell Mills, but the shrewd managers thereof sent samples of honest goods to China, and in a short time built up an enormous trade, which keeps several large mills running all the year round. Two years ago an American maker of kerosene lamps was asked to make some cheap and badly made lamps for the English market by a London dealer, who said Yankee lamps were too good for European markets. He learned that the American had decided to open stores in London and Paris, managed by "Yankee drummers." The Englishman declared that European buyers would not buy the patterns nor pay the prices. Events have proved that European buyers want our lamps, and will pay better prices than rule here, for nine American lamp factories have wholesale and retail stores in London, Birmingham, Sheffield, Paris and Marseilles. In Japan, the Yankees of the East won't use any lamp for kerosene which is not of an American pattern.

American goods are the best in the world for the reason that the standard of commercial honesty, inventive ability, and mechanical construction is higher here than elsewhere in the world.

G. WILFRED PEARCE in *New York Sun*.

An American Woman Farmer.

A STRONG contrast with the present condition of English agriculture is presented by the following account, taken from the *Farm Implement News*, of the success of an American woman farmer in that section of the United States that has learned the lesson of the economic value of intelligence, and the enormous gain made by freeing human labor and substituting therefor the machine slave:

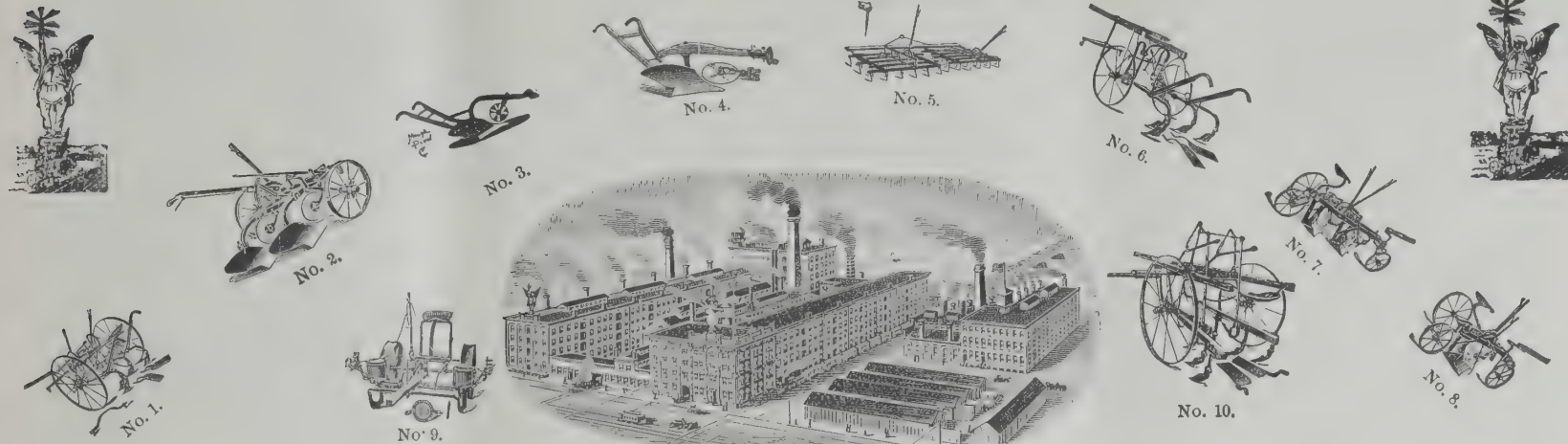
"A young woman who is making a big success of farming on a large and varied scale is one of the principal exhibitors in the agricultural sections at the Atlanta Exposition. She is Miss Annie Dennis, of Talbotton, Ga., U. S. A., and is about twenty-five years old. She has a fine estate of about 1,000 acres, on which she has a stock farm, a dairy, an extensive piggery, a vineyard, and a canning and preserving establishment. She personally directs the work on the estate, and has made a notable success in every branch. She began farming seven years ago, and since then has taken more than 100 prizes at fairs with various products of her farm. She ascribes her success to a long course of study in agricultural problems, and to the utilization of every proved scientific method in her farming operations."

THE METALLIC BEDSTEAD has become an important factor in international competition. This may not affect its relationships with the average night-cap, but with manufacturers it is not conducive to peace of mind or a balance on the right side of the ledger. England, Germany and the United States are all in the contest. Spain is importing tubes from Great Britain, Germany is making raids on neutral markets, and the United States is sending out advices that the metallic bedstead can be delivered in Great Britain and Europe at 10 per cent. below the Birmingham, England, list. According to an English contemporary, the recent advance in the price of tubes in that country is handicapping the British manufacturers. And thus it is that competition cares nothing for either bedsteads or repose in the race of trade.

THE real start of the pneumatic tire in the United States dates from the Pullman road race of May 30, 1891. On that occasion, owing to the reports received from England, the wheels having pneumatic tires were heavily handicapped, but, notwithstanding this disadvantage, clearly proved their superiority. Then the bicycle manufacturers realized for the first time that the wheel of the future was one with a pneumatic tire, and all set about securing a tire for their respective wheels. The result was that in that very year four distinctive types of tires were brought out in America.

MOLINE, ILL.
U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
U. S. A.

MANUFACTURERS OF THE BEST GRADES OF

Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes. Beet Machines. Etc.No. 1. Dandy Combined Riding and Walking Cultivator.
No. 2. Wheel Walking Gang Plow, 24 inches.No. 3. Steel Beam Plow with Rolling Coulter S. B.
No. 4. Wood Beam Plow with Rolling Coulter.No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

F. O. B. NEW YORK.

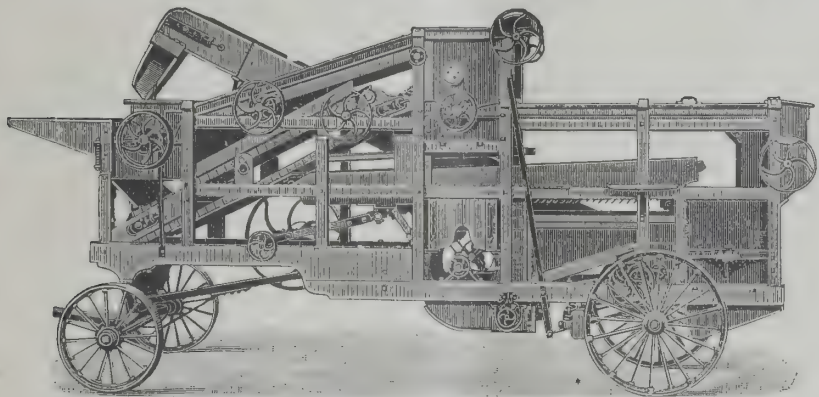
Foreign Agencies:

PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.

THE AULTMAN & TAYLOR MACHINERY COMPANY

MANSFIELD, OHIO, U. S. A.

MANUFACTURERS OF

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STATIONARY, PORTABLE AND TRACTION ENGINES,
Horse Powers,
Tubular Boilers and Iron Tanks**

OF ALL KINDS AND SIZES FOR LOCOMOTIVES

Write us for DETAILS, PRICES and ANY DESIRED INFORMATION.**Is SUPERIOR to "CORN STARCH," "ARROWROOT," "SAGO," Etc.****TRADE MARK**
MAIZENA
(DURVEA.)Gold Medal Awarded
"MAIZENA."Paris Exposition,
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This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

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BRUSSELS, 1876. "Notably Excellent."

PARIS, 1887. "Perfection in Preparation."

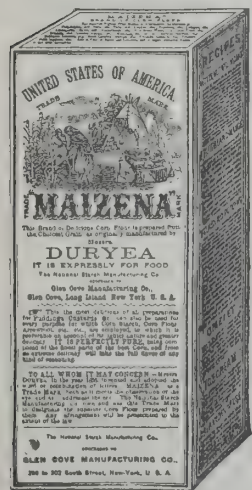
CENTENNIAL, 1876. "Notably and Absolutely Pure."

PARIS, 1878. "Best Produced of Its Class."

FRANKLIN INSTITUTE. "Superior Merit."

Put up exclusively by THE NATIONAL STARCH MFG CO., successor to (Messrs. DURVEA) GLEN COVE MANUFACTURING CO., N. Y. U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and ½ lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

None GENUINE without "DURVEA" appearing on the face of Package.

**ELI HAY PRESSES**
All kinds of
Hay and Straw Presses
for Horse and Steam Power.
Special attention to Export Trade.
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HIGHEST AWARDS WORLD'S COLUMBIAN EXPOSITION.

We make the most rapid Hay and Straw Press in the world.
Also manufacture Harrows, Cultivators and 140
different shapes and sizes of Riding and Walking**PLOWS.**

Send for Catalogues.



Value of Acetylene.

WHEN it was first proved, says the *Chicago Record*, that by heating a mixture of coal or lime or charcoal and chalk in an electric furnace a compound resulted which upon being thrown into water evolved acetylene the gas companies were naturally elated. They looked upon the new discovery as a cheap and easily procurable substance for mixing with their own product and thus raising its illuminating power. Acetylene, however, is turning out to be an even more extraordinary substance than has been suspected. It has so many strings to its bow that its exploiters are presumably abandoning the problem of enriching gas, and are actively engaged in demonstrating that by means of it the cheaper manufacture of innumerable substances which are used in the arts, but which up to the present have been the products of pure chemistry, can be achieved. The acetylene, on being passed through an iron tube heated to dull redness, turns rapidly and completely into benzene. This is a product of prime importance and is the base of thousands of organic substances. In illustration of the transmutations which can be effected it may be pointed out that if the resultant benzene vapor be passed into strong nitric acid it is transformed into nitro-benzene, and this on treatment with hydrochloric acid and iron filling goes into aniline. With the formation of aniline the road is opened for the production of immense series of dye substances, of which aniline is the starting point. Instead of transforming acetylene into aniline, however, it may be changed into carbolic acid—thence it is but a step to picric acid, the formation of the modern high explosives. Or it may be made into aniline and then boiled with acetic acid, when it is transformed into anti-fibrin, the well-known fever specific. Again, by passing it through a tube heated to bright redness, naphthalene is produced, which is also the starting point of a legion of valuable chemicals. It would seem as though almost all the needs of man were able to be satisfied by this protean substance. The further investigation is pushed into its possibilities the more astounding and bewildering they become. By the action of nascent hydrogen acetylene becomes ethylphuric acid and water becomes alcohol, which, apart from its other uses, is absolutely necessary to the production of an enormous number of economic substances. In similar ways we can get such deadly poisons as oxalic acid and prussic acid, while acetylene is a cheap source of the aldehyde so much used in the production of artificial essences and the manufacture of mirrors. When, therefore, it is considered that from acetylene can be derived whole systems of dyes, medicines, essences, perfumes, poisons, explosives, not to mention cheap whisky, it will be seen that the latest product of the electric furnace has a utility out of all proportion greater than that which can be derived from its peculiar light-giving powers.

American Goods in London.

PROMINENT among many articles of American manufacture being sold in London are carpets, boots and shoes and artistic silverware. The class of English buyers who are intent upon obtaining best value for their money are buying and advising others to purchase these American goods. The situation is described in a recent dispatch from London, as follows: English manufacturers have been stirred up by articles in several of the most widely circulated workingmen's papers advising those who wish to get the most for their money to buy goods of American make. Numerous instances are cited in the articles calculated to demonstrate the wisdom of this advice. At Maple's immense establishment in that city, which has the reputation of being the largest retail general outfitting house in the world, large quantities of Axminster carpets have been sold during the last few years. They are cheaper than any others furnished in the English market, and the designs are decidedly better. These carpets have been used in some of the public offices of the British Government. American boots and shoes are displayed in the shops of all the leading retailers, and the English are beginning to admit that in shape, material and excellence of workmanship they are not only superior but cheaper than the British article. Although American furniture is not as yet well known in the English market, numerous instances are cited where householders have sent to the United States for chamber sets, parlor sets, folding beds, the prices being lower than are obtainable in London, even when the cost of transportation is reckoned in. Artistic silverware is another item in the purchase of which buyers are recommended to patronize American manufacturers, the designs being more artistic and the prices more reasonable than those of the domestic makers.

A LONDON trade journal, *Machinery*, is trying to awaken British manufacturers to the advantage of American factory methods and appliances, by publishing "a series of articles upon, and illustrations of, the latest Yankee inventions and improvements." It contends that on account of their conservatism and slowness to adopt new and improved methods, British manufacturers cannot build as rapidly and cheaply, nor as accurately, as Americans can with their special machinery, and that, therefore, the former are being left behind in the race for foreign trade.

IT is estimated that the American output of bicycles for 1895 will exceed 400,000. Now authorities in this line, judging from the course of the trade, are placing the requirements of next year variously from 600,000 to 800,000, and are asking: "How can the demand for bicycles be supplied in 1896?" Bicycles have come to stay, undoubtedly, for they are useful as well as ornamental; that is, they serve both pleasure and business; but it should be remembered that immediately after a new and taking thing has been well introduced comes the biggest run for it.

An Acknowledged Defeat for English Coal.

CHEAP coal means cheap power; cheap power means industrial supremacy. These facts have long been accepted as economic axioms. When Lord Salisbury said "no one can beat us in the markets of the world," was he aware that defeat had already been acknowledged in the fundamental factor of cheap coal? The *London Times*, discussing the cost of getting coal in England, says: "A very remarkable feature of the recent course of the coal industry is furnished by an examination of the course of prices. Within the last few years the increased depth of working necessitated by the economic conditions under which the coal is won, the restrictions and the increased outlay entailed by the provisions of the several mines' regulations acts, and the movements of labor, with a few minor influences, have considerably increased the cost of producing coal in the United Kingdom. On the other hand, the greater command of capital, which has enabled collieries to be opened out and operated on a much larger scale, and the most economical machinery and appliances to be employed, the greater efficiency of labor and the adoption of more economical methods and processes have enabled other coal-producing countries to produce considerably cheaper than they formerly did. The irrevocable result has been that Great Britain has now—and only within the last few years—ceased to command the supremacy which she had formerly enjoyed as a cheap coal-producing country. The 'Mineral Statistics,' our official record of production and prices, show that the average value of the coal output in the United Kingdom in 1892 was 7s. 3d., and in 1893, 6s. 9½d. per ton, whereas a few years ago it seldom exceeded 5s. to 5s. 3d. per ton. In Germany the average value of the coal output, taken as a whole, was within a fraction of the same prices for the same years, while in Belgium the average was somewhat higher, although in both cases the average was much under that of a few years ago. But in the United States the recorded value of the output of bituminous coal has not, for several years past, averaged much over 4s. 3d. per ton, and in some States the average falls to about 3s. 6d. per ton, which is only a trifle more than one-half of the official value of our own coal supply two years ago."

Motor Delivery Wagons.

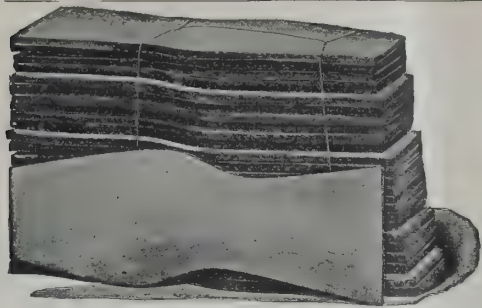
THE United States Express Company has decided to use horseless wagons or motor vehicles in New York City for the delivery of small packages in New York and its environs. If the experiment proves satisfactory, they will, it is said on good authority, extend the system to all cities throughout the United States where they have offices. This action by such a company is significant. Its management is known to be conservative, but far-sighted. The subject of changing method of delivery has been under consideration for some time. Careful investigation has been made into the system of mechanically propelled vehicles, and although such vehicles are not yet in service, this company has been satisfied that it is the safest and best system. Other corporations handling packages on a large scale are considering the same subject, and it is understood are favorably inclined to this form of delivery service. The necessity for an improvement and a departure from horse service is, if not imperative, at least extremely desirable. Merchants, manufacturers and others who have been consulted on this subject uniformly and promptly agree that if the proposed system is practical, they will not be slow to adapt themselves to it. The field for package delivery is far broader than is apparent at first sight. The vehicle industry is facing encouraging possibilities and probabilities in this direction. Horse service has many patent disadvantages in cities and towns; power-actuated service has numerous evident advantages.

The carriage builders are wisely watching this most interesting field. So far estimates of possible economy are more or less in the nature of guess-work, especially as cost of vehicles are at present only approximately ascertainable. The distribution of packages will very probably open up a field for work that will stimulate some branches of the carriage-building industry to a marked degree.—*Carriage Monthly*.

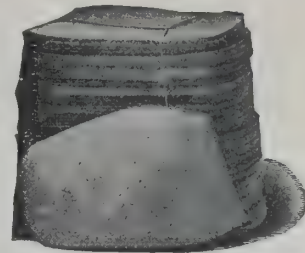
Paper Rims for Bicycles.

IT is asserted by even such an authority as *American Cycling*, that paper rims will be put into bicycles next summer. First it was steel, then wood, and now paper. Not tissue paper, to be sure, but paper, nevertheless, and the change is to secure what seems to be uppermost in the minds of all the bicycle manufacturers just now—lightness in construction. And the substitution of paper for wood will not, it is claimed, sacrifice a particle of the strength of the wheel.

An Indiana man is the inventor of this new scheme, and he is one of a company who are now establishing a factory at La Porte, Ind., U. S. A., for the manufacture of wheels in which nothing but paper rims will be used. The process, as explained by one of that company, is this: Strips of ordinary express wrapping paper are put on a reel and allowed to pass slowly through a tank containing a solution, which first soaks in, and when dry, hardens and stiffens the paper. It takes about ten days for the solution to dry, but at the end of that time, it is claimed that a paper rim made in this way has all the strength, life and elasticity of a wooden rim. The weight is a good deal less in proportion than that of wood, and those who have experimented with the paper rims say they are destined to supplant the others. Some manufacturers have sacrificed a good deal in the way of strength to lightness. Perhaps here is a chance to lighten up the rims and add a little needed weight and strength elsewhere.

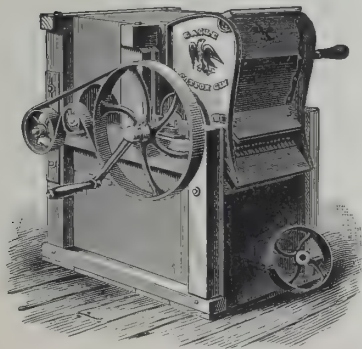


Shoemakers and Shoe Repairers save Money, Labor, Waste and Time when they use Cut Sole Leather (Soles, Half Soles, Heel Lifts, etc.) Prices and full particulars will be furnished on application.



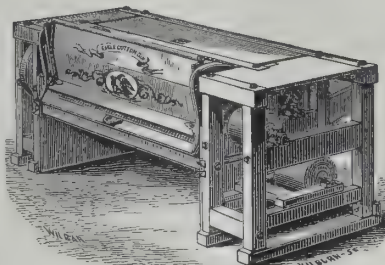
BAXTER, STONER & SCHENKELBERGER,
BOSTON, U. S. A. LONDON, ENGLAND.

EAGLE COTTON GINS.

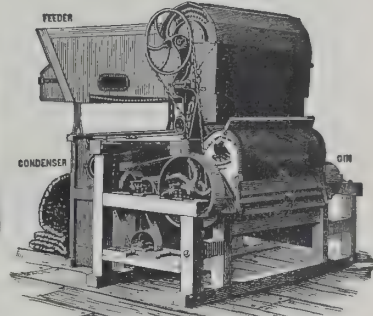


These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details, illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

Eagle Cotton Gin Co. { FORMERLY Bates, Hyde & Co. } Bridgewater, Mass.

FRASER MFG. CO.

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MANUFACTURERS OF

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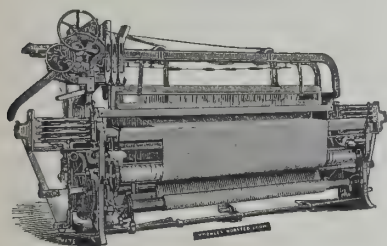
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A complete line of Machinery for Plantation Use
CONSISTING OF

DRYERS, PULPERS,
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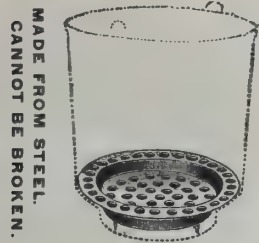
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When ordering through Commission Houses please send us a duplicate of your order.



SAFETY KETTLE BOTTOM.

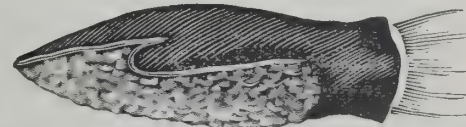
Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

Stove Polishing Mitten,

FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty-four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands. \$18.00 per gross F. O. B. at New York.

For Particulars address DIAMOND HARDWARE CO., 620 Atlantic Ave., Boston, Mass., U. S. A.



EMPIRE MOULDING WORKS,

ROCHESTER, N. Y., U. S. A.

— MAKERS OF —

AGENCIES:

L. H. DODGE & CO.,
115 FORT ST., E. C., LONDON.

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85 CLARENCE ST., SYDNEY, N. S. W.

Moulding and Frames

In greatest variety for export.

Illustrated Catalogue "A" on application.

THE
"CHALLENGE"
LEADS
THEM ALL.

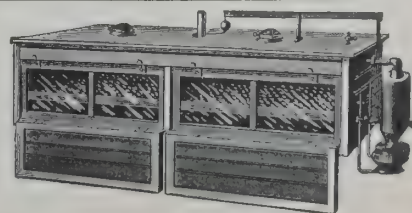
This machine has been exhibited in competition at all the leading shows in the U. S. Never in a single instance has it been defeated.

It is a perfect self-regulator and is supplied with an automatic egg turner making it so simple that even the most inexperienced can manage it without difficulty. It will run perfectly in all climates.

Sold through all export houses in Boston, New York and Philadelphia.

FOR COMPLETE DESCRIPTION SEND FOR CATALOGUE "B."

WOOD & PAIGE, - Lynn, Mass., U. S. A.



A New Abrasive.

WHILE trying to make artificial diamonds by sending the electric current through a mixture of carbon and clay, four years since, Edward G. Acheson, of Monongahela, Pa., produced some bright blue crystals which chemical analysis showed to be carbide of silicon. It quickly came into use in powdered form as an abrasive superior to diamond dust. It has been manufactured at the rate of about 300 pounds a day and sold in the form of wheels, hones, files, scythe stones and the like. Dental instruments are made of it. So great is the demand for this article, both in this country and Europe, that its inventor has built electric furnaces at Niagara Falls, and with such simple materials as sand, salt, coke and sawdust, mixed together and raised to the surprising temperature of 7,000 degrees by electricity, is turning out tons of this toughest abrasive known. The starting of the first of these furnaces was watched with great interest by electrical experts, because of the tremendous power expended. The furnace resembled "an electrical Hades." "Lambent flames played around the walls, and along the top, waves of blue flames travelled to and fro; slight explosions took place." Mr. Acheson missed the diamond, but he came very near to it. He believes that besides carborundum his new furnaces will some day produce a new crystalline product which will take a high place among the gems.

Largest Hydraulic Suction Dredge.

MECHANICAL genius has had a wide range for its activities in the modern dredger. The improvement of American waterways has led to the deepening of channels, and the removal of such obstructions as sand bars and shoals. In this department of progress, as in all others, the labor-saving machine has become an essential factor. Among the more recent constructions in the line of dredging, we note what is claimed to be the largest hydraulic suction dredge in the world to be used in improving the Mississippi River. It makes a scoop of sand 60 feet wide and 6 feet deep. The power is furnished by twin triple expansion engines of four cylinders and of 1,200 horse-power. Considerable interest is evinced in the working of this dredger, which, if all that is claimed for it, will be an added triumph to mechanical genius.

Programme Clock.

LEON H. WATTERS, principal of the public schools of Media, Pa., U. S. A., has just received a patent for a programme attachment for clocks. Soon after taking charge of the Media schools Mr. Watters found that much valuable time was wasted in looking after the electric bells used for calling and dismissing school, and that even then the bells were not always rung on time, for in the midst of an interesting recitation the bells for the dismissal of the lower grades would often be overlooked. He therefore set about devising apparatus by which the bells might be rung by the large clock which hangs in the high school room.

It was a year or more before he struck upon the right device; but finally an attachment was made for the dial of the clock, by which any number of bells can be rung at any minute of the day. The apparatus has been in successful operation for the past five years, and has in that time relieved him from pressing the button some 20,000 times. The device is one that may be used in any school, factory, or other place of business where work must be done on time.

Growth of the Leather Industry.

THAT our readers may form a comparative idea of the growth of this industry in this country, the following figures relating thereto are here presented from statements that were carefully compiled from the census reports to Congress at the various periods here mentioned.

In the year 1840, \$33,134,403 was the value of the product of shoes, harness and leather. There were 5,750,000 domestic hides tanned, and hides and skins imported to the value of \$2,756,214.

In 1850 there were 6,528 tanneries, the product of leather being valued at \$57,702,333. The 116 morocco factories produced morocco to the value of \$3,861,895. Patent leather factories to the number of 20 produced \$1,368,300 worth of this leather, while the four belting works turned out belting to the amount of \$105,000. The total value of leather and shoes reported was \$91,669,741.

In 1860 the production of sole and upper leather is stated at \$63,090,751; morocco and patent leather, \$4,220,000; total product, \$67,310,751.

In 1870 the number of tanneries is reported as 7,569, with a product of \$157,237,597. The hides and skins tanned were worth \$66,581,114.

In 1880 the 3,105 tanneries tanned to the value of \$113,348,336; the curried product was \$71,351,297. The number of hides tanned was 11,773,171; skins, 19,936,568; total hides and skins, 31,709,829.

In 1890 the number of tanneries is stated at 1,596, with sole and upper leather valued at \$138,282,004; morocco, \$26,279,105; enamelled and patent leather, \$6,502,228; total value, \$171,063,337.—*Shoe and Leather Facts.*

—The exports of furniture from the port of New York for five weeks, show a total of \$93,000. As before any considerable export of a domestic fabric can be established the main demand of the home market must usually be supplied, the above statistics show that our manufacturers of furniture are doing a prosperous business and are in a very hopeful and promising condition.

Industrial Notes.

THE Reading Stove Works have sent a large consignment of wood-burning stoves to Australia, and are busily engaged in filling another larger order of the same sort for Cape Town, Africa.

KELLY AXE MANUFACTURING CO., Alexandria, Ind., U. S. A., manufacture the patented W. C. Kelly Perfect Axe. This axe is tempered by the patent Kelley chemical process which so hardens the axe that it may be used for chopping stone or iron without nicking. The axe is solid steel, hand hammered. It has a tapered eye which binds the handle and a ridge blade that is easy to sharpen. It is among the most effective tools for its purposes that has ever been made.

CHARLES BESELER, 218 Centre street, New York, offers those of our readers who may contemplate purchasing magic lanterns a very superior instrument. The particular merits of this lantern are described in his catalogue, which he will gladly mail to any one upon application. We understand that Mr. Beseler has many foreign customers, and one of these in Mexico is so well pleased with his purchase that he has written us with special reference to the excellence of the instrument and the satisfaction it has given him.

THE new catalogue of the Blymyer Iron Works Co., Cincinnati, Ohio, U. S. A., in English, has just been issued. The Spanish edition will be ready in about one month. This catalogue gives in concise and plain words full and accurate information concerning all lines of plantation machinery, special reference being made to varied improvements in machines for the manipulation of sugar, coffee and rice. The design has been to make this catalogue of great practical value to those interested in plantation machinery.

J. A. FAY & EGAN CO., Cincinnati, Ohio, U. S. A., have recently shipped an entire equipment for a great lumber plant to Johannesburg, South Africa. They have received orders for their tools and woodworking machinery with such frequency from that region as to cause them to send Mr. Edgar C. Seeborn to Johannesburg to represent their interests. It is a tribute to American skill, to American brains and to American enterprise that in a territory controlled by British capital and under British government, whose enterprises are almost entirely calculated from a British standpoint, American woodworking machinery is recognized as superior to that of their own manufacture.

P. D. RANDALL & SON, Troy, N. Y., U. S. A., sole manufacturers of the Randall Bolt and Rivet Clippers, offer a tool that does the carriage mechanic's heart good to look at and use. The especial value of a good bolt clipper is its quick and accurate adjustment, even to a hair's breadth. This is what the "Randall" is intended to do, every single one of them because they are all tested before being delivered for use. Their new valve adjusting bolt clipper represents, it is said, the highest achievements in clipper work. The speed, accuracy and efficiency with which the largest cutting is done, is surprising even in these days of surprising progress.

THE CONSUMPTION OF COPPER at present date is far ahead of what was anticipated some years ago. Its uses were then supposed to have at any rate approximated their limit. This forecast was not only premature but erroneous. Copper has not yet reached the last stage of its travels, and it is more than likely that it never will. In the modern applications of electric energy it has found a huge disk on which to radiate. In the storage battery system and in that of the electric trolley, copper is an essential factor. As these are more extensively used the consumption of copper will increase, and no one as yet is bold enough to define the limits of their development. In telegraphy and telephonic extension, which is practically beyond any estimate, copper has a broad and busy future. In the substitution of defective iron wires by the Western Union Telegraph Company, not less than 10,000 miles of copper line was placed within 12 months. Other uses might be cited to show that the use of copper is steadily increasing. The halt is not called yet.

—At present rate we are exporting \$300,000 worth of bicycles per year.

—The National Tube Works Company, McKeesport, Pa., has just made a large shipment of wrought-iron pipe to South Africa, to be used for mining purposes. The company recently made shipments of pipe to London which is now being laid.

—The output of American iron and steel mills is now much larger than that of any other nation, and it can be indefinitely increased. Is this not a good time for them to enlarge their export trade? There may be a slackening of demand for their products at home, but the foreign markets are open to them.

—The decline during the last few months in the exports of agricultural implements, both from this country and Great Britain, while the exports of mining machinery have been increasing greatly, is remarkable and indicates that less attention is being given to agriculture and more to mining in the colonial countries.

—We Americans have a greater number of workers than any other civilized country, and, man for man, we far exceed any other in productive capability. Our producing plant, whether in agriculture, mining, transportation, or manufacturing, is of such a character and so manipulated as to give maximum results with a minimum waste of energy. Nature has been lavish of her blessings, and we depend more than any other country on our own resources for material.

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FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry) ..	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	21¼ inches.
Arobo.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1.011 pounds.	do.....	Uruguay (double) ..	7.776 bushels.	do.....	China, Japan and Sumatra.....	133½ pounds.
Arroba (dry) ..	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	Fanega (liquid)	Spain.....	16 gallons.	do.....	(hemp).....	
do.....	Portugal.....	32.38 pounds.	Feddán.....	Egypt.....	1.03 acres.	do.....	Philippine Islands	140 pounds.
do.....	Spain.....	25.36 pounds.	Fraih (raisins) ..	Spain.....	50 pounds.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Venezuela.....	25.4024 pounds.	Frasco.....	Argentine Republic	2.5096 quarts.	do.....	Castilian.....	0.91407 foot.
Arroba (liquid).	Cuba, Spain and Venezuela.....	4.263 gallons.	do.....	Mexico.....	2.5 quarts.	Pik.....	Turkey.....	27.9 inches.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	Pood.....	Russia.....	36.112 pounds.
Arshine (-qu're)	do.....	5.44 square feet.	Garnice.....	Russian Poland	0.88 gallon.	Pund (pound) ..	Denmark, Sweden.	1.102 pounds.
Artel.....	Morocco.....	1.12 pounds.	Gram.....	Metric.....	15.432 grains.	Quarter.....	Great Britain.....	8.252 bushels.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.	Hectare.....	do.....	2.471 acres.	do.....	London (coal).....	36 bushels.
Barrel.....	Malta (customs) ..	11.4 gallons.	Hectolitre:	do.....		Quintal.....	Argentine Republic	101.42 pounds.
do.....	Spain (raisins) ..	100 pounds.	Dry.....	do.....	2.838 bushels.	do.....	Brazil.....	130.06 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Liquid.....	do.....	26.417 gallons.	do.....	Castile, Chile, Mex- ico and Peru.....	101.61 pounds.
Bongkal.....	India.....	832 grains.	Joch.....	Austria-Hungary ..	1.422 acres.	do.....	Greece.....	123.2 pounds.
Bow.....	Sumatra.....	7.096.5 square metres.	Ken.....	Japan.....	4 yards.	do.....	Newfoundland (fish)	112 pounds.
Bu.....	Japan.....	0.1 inch.	Kilogram (kilo)	Metric.....	2.2046 pounds.	do.....	Paraguay.....	100 pounds.
Butt (wine) ..	Spain.....	140 gallons.	Kilometre.....	do.....	0.621376 mile.	do.....	Syria.....	125 pounds.
Cafiso.....	Malta.....	5.4 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Metric.....	220.46 pounds.
Candy.....	India (Bombay) ..	529 pounds.	Kota.....	Japan.....	5.13 bushels.	Rottle.....	Palestine.....	6 pounds.
do.....	India (Madras) ..	500 pounds.	Korree.....	Russia.....	3.5 bushels.	do.....	Syria.....	5¼ pounds.
Cantar.....	Morocco.....	113 pounds.	Last.....	Belgium, Holland ..	85.134 bushels.	Sagen.....	Russia.....	7 feet.
do.....	Syria (Damascus) ..	575 pounds.	do.....	England (dry malt) ..	82.52 bushels.	Salm.....	Malta.....	490 pounds.
do.....	Turkey.....	124.7036 pounds.	do.....	Germany.....	2 metric tons (4,480 pounds.)	Se.....	Japan.....	3.6 feet.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Prussia.....	112.29 bushels.	Seer.....	India.....	1 pound 13 ounces.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Russian Poland.....	11½ bushels.	Shaku.....	Japan.....	10 inches.
Catty.....	China.....	1.333½ (1¼) pounds.	do.....	Spain (salt).....	4.760 pounds.	Sho.....	do.....	1.6 quarts.
do.....	Japan.....	1.31 pounds.	League (land) ..	Paraguay.....	4.633 acres.	Standard (St.	Lumber measure...	165 cubic feet.
do.....	Java, Siam, Malacca	1.35 pounds.	Li.....	China.....	2.115 feet.	Petersburg) ..		
do.....	Sumatra.....	2.12 pounds.	Libra (pound) ..	Castilian.....	7.100 grains (troy).	Stone.....	British.....	14 pounds.
Centaro.....	Central America.....	4.2631 gallons.	do.....	Argentine Republic	1.0127 pounds.	Suerte.....	Uruguay.....	2,700 cuadras (see cua- dra).....
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Central America.....	1.043 pounds.	Tael.....	Cochin China.....	590.75 grains (troy).
do.....	Darmstadt.....	110.24 pounds.	do.....	Chile.....	1.014 pounds.	Tan.....	Japan.....	0.25 acre.
do.....	Denmark, Norway ..	110.11 pounds.	do.....	Cuba.....	1.0161 pounds.	To.....	do.....	2 pecks.
do.....	Nuremberg.....	112.43 pounds.	do.....	Mexico.....	1.01465 pounds.	Ton.....	Space measure ..	40 cubic feet.
do.....	Prussia.....	113.44 pounds.	do.....	Peru.....	1.0143 pounds.	Tonde (cereals)	Denmark.....	3.94783 bushels.
do.....	Sweden.....	93.7 pounds.	do.....	Portugal.....	1.011 pounds.	Tondeland.....	do.....	1.36 acres.
do.....	Vienna.....	123.5 pounds.	do.....	Uruguay.....	1.0143 pounds.	Tsubo.....	Japan.....	6 feet square.
do.....	Zollverein.....	110.24 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tsun.....	China.....	1.41 inches.
Chh.....	China.....	220.46 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tunna.....	Sweden.....	4.5 bushels.
Chih.....	China.....	14 inches.	Livre (pound) ..	Greece.....	1.1 pounds.	Tunnland.....	do.....	1.22 acres.
Coyan.....	Sarawak.....	3,068 pounds.	do.....	Guiana.....	1.0791 pounds.	Vara.....	Argentine Republic	34.1208 inches.
do.....	Siam (Koyan) ..	2,667 pounds.	Load.....	England (timber) ..	Squ're, 50 cubic feet; unbewn, 40 cubic feet; inch planks, 600 superficial feet.	do.....	Castile.....	0.914117 yard.
Cuadra.....	Argentine Republic	4.2 acres.	Manzana.....	Costa Rica.....	1½ acres.	do.....	Central America.....	38.874 inches.
do.....	Paraguay.....	78.9 yards.	Marc.....	Bolivia.....	0.507 pound.	do.....	Chile and Peru.....	33.267 inches.
do.....	Paraguay (square) ..	8.077 square feet.	Maud.....	India.....	82½ pounds.	do.....	Cuba.....	33.384 inches.
do.....	Uruguay.....	Nearly 2 acres.	Metre.....	Metric.....	39.37 inches.	do.....	Curacao.....	33.375 inches.
Cubic metre.....	Metric.....	35.3 cubic feet.	Mil.....	Denmark.....	4.68 miles.	do.....	Mexico.....	33 inches.
Cwt. (hundred- weight.).....	British.....	112 pounds.	do.....	Denmark (geograph- ical).....	4.61 miles.	do.....	Paraguay.....	34 inches.
Dessiatine.....	Russia.....	2.6997 acres.	Morgen.....	Prussia.....	0.63 acre.	do.....	Venezuela.....	33.384 inches.
do.....	Spain.....	1.599 bushels.	Oke.....	Egypt.....	2.7225 pounds.	Vedro.....	Russia.....	2.707 gallons.
Drachme.....	Greece.....	Half ounce.	do.....	Greece.....	2.84 pounds.	Verges.....	Isle of Jersey.....	71.1 square rods.
Dun.....	Japan.....	1 inch.	do.....	Hungary.....	3.0817 pounds.	Verst.....	Russia.....	0.663 mile.
Egyptian w'ts. and measures.	(See CONSULAR RE- PORTS No. 144.)		do.....			Vloeka.....	Russian Poland.....	41.98 acres.
Fanega (dry) ..	Central America ..	1.5745 bushels.						

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
 Centigram ($\frac{1}{100}$ gram) equals 0.1543 grains.
 Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
 Gram equals 15.432 grains.
 Decagram (10 grams) equals 0.3527 ounce.
 Hectogram (100 grams) equals 3.5274 ounces.
 Kilogram (1,000 grams) equals 2.2046 pounds.
 Myriagram (10,000 grams) equals 22.046 pounds.
 Quintal (100,000 grams) equals 220.46 pounds.
 Millier or tonnes - ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
 Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
 Litre equals 0.908 quart.
 Decalitre (10 litres) equals 9.08 quarts.
 Hectolitre (100 litres) equals 2.388 bushels.
 Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
 Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
 Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
 Litre equals 1.0567 quarts.
 Decalitre (10 litres) equals 2.6417 gallons.
 Hectolitre (100 litres) equals 26.417 gallons.
 Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.

Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
 Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
 Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.)
 Metre equals 39.37 inches.
 Decametre (10 metres) equals 393.7 inches.
 Hectometre (100 metres) equals 328 feet 1 inch.
 Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10 inches).

Myriametre (10,000 metres) equals 6.2137 miles.
 Centare (1 square metre) equals 1.550 square inches.
 Are (100 square metres) equals 119.6 square yards.
 Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.

Length.	Surface.	Capacity.	Weight.	Notation.
			Metric ton	1,000,000
			Quintal.....	100,000
Myriametre.....			Myriagram.....	10,000
Kilometre.....			Kilogram.....	1,000
Hectometre.....	Hectare.....	Hectolitre.....	Hectogram.....	100
Decametre.....	Decare.....	Decalitre.....	Decigram.....	10
METRE.....	ARE.....	LITRE.....	GRAM.....	1
Decimetre.....		Decilitre.....	Decigram.....	0.1
Centimetre.....	Centiare.....	Centilitre.....	Centigram.....	0.01
Millimetre.....		Millilitre.....	Milligram.....	0.001

EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.

1 kilometre.....	0.62137 mile.	1 mile.....	1.60935 kilometres.
1 metre.....	3.28083 feet.	1 yard.....	0.91440 metre.
1 centimetre.....	0.3937 inch.	1 foot.....	0.304801 metre.
1 hectare.....	2.471 acres.	1 inch.....	25.4001 millimetres.
1 are.....	119.6 square yards.	1 square mile.....	2.59 square kilometres.
1 metric ton.....	2,204.62 pounds.	1 acre.....	0.4047 hectare.
1 kilogram.....	2.20462 pounds.	1 square foot.....	0.29 square decimetres.
1 gram.....	15.43236 grains.	1 pound.....	0.453-9 kilogram.
1 hectolitre.....	2.8377 bushels.	1 grain.....	64.7989 milligrams.
1 hectolitre.....	26.417 gallons.	1 bushel.....	0.35239 hectolitre.
1 litre.....	1.0567 quarts.	1 gallon.....	3.78543 litres.
1 stere.....	1.308 cubic yards.	1 cubic foot.....	0.02832 cubic metre.

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

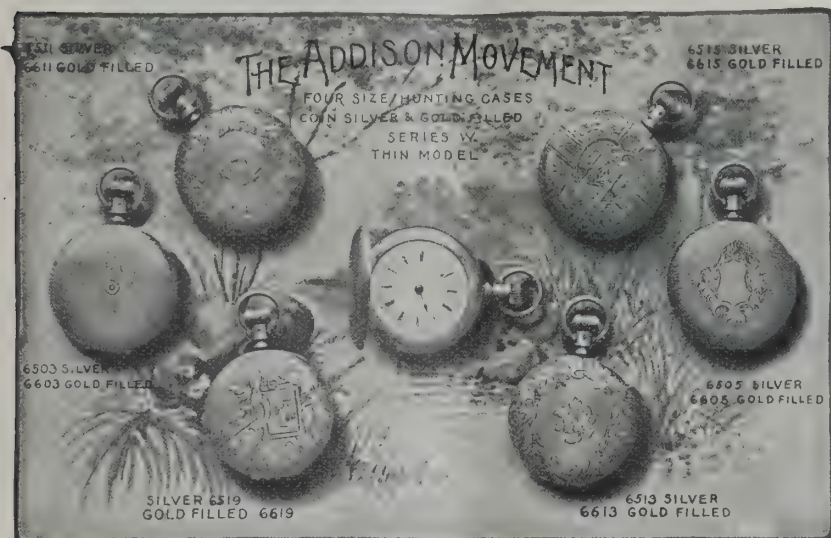
Millimetres $\times 0.03937$ = inches.
 Millimetres $\div 25.4$ = inches.
 Centimetres $\times 0.3937$ = inches.
 Centimetres $\div 2.54$ = inches.
 Metres $\times 39.37$ = inches. (Act Congress.)
 Metres $\times 3.281$ = feet.
 Metres $\times 1.094$ = yards.
 Kilometres $\times 0.621$ = miles.
 Kilometres $\div 1.6093$ = miles.
 Kilometres $\times 3,280.7$ = feet.
 Square millimetres $\times 0.0155$ = sq. inches.
 Square millimetres $\div 645.16$ = sq. inches.
 Square centimetres $\times 0.155$ = sq. inches.

Square centimetres $\div 6.451$ = sq. inches.
 Square metres $\times 10.764$ = sq. feet.
 Square kilometres $\times 247.1$ = acres.
 Hectare $\times 2.471$ = acres.
 Cubic centimetres $\div 16.383$ = cubic inches.
 Cubic centimetres $\div 3.69$ = fl. drams.
 Cubic centimetres $\div 29.57$ = fluid oz. (U. S. P.)
 Cubic metres $\times 35.315$ = cubic feet.
 Cubic metres $\times 1.308$ = cubic yards.
 Cubic metres $\times 264.2$ = gallons (231 cu. in.)
 Litres $\times 61.022$ = cubic in. (Act Congress.)
 Litres $\times 33.84$ = fluid ounces (U. S. Phar.)
 Litres $\times 0.2642$ = gallons (231 cu. in.)
 Litres $\div 3.78$ = gallons (231 cu. in.)

Litres $\div 28.316$ = cubic feet.
 Hectolitres $\times 3.531$ = cubic feet.
 Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)
 Hectolitres $\times 0.131$ = cubic yards.
 Hectolitres $\times 26.42$ = gallons (231 cu. in.)
 Grams $\times 15.432$ = grains. (Act Congress.)
 Grams $\div 981$ = dynes.
 Grams (water) $\div 29.57$ = fluid ounces.
 Grams $\div 28.35$ = ounces avoirdupois.
 Grams per cu. cent. $\div 27.7$ = lbs. per cu. in.
 Joule $\times 0.7373$ = foot pounds.
 Kilograms $\times 2.2046$ = pounds.
 Kilograms $\times 35.3$ = ounces avoirdupois.
 Kilograms $\div 1,102.3$ = tons (2,000 lbs.)

Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
 Kilogram-metres $\times 7.233$ = foot lbs.
 Kilo per metre $\times 0.672$ = lbs. per foot.
 Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
 Kilo per cheval $\times 2.235$ = lbs. per H. P.
 Kilowatts $\times 1.34$ = horse-power.
 Watts $\div 746$ = horse-power.
 Watts $\div 0.7373$ = foot pounds per second.
 Calorie $\times 3.968$ = B. T. U.
 Cheval vapeur $\times 0.9863$ = horse-power.
 (Centigrade $\times 1.8$) $\div 32$ = degree Fahrenheit.
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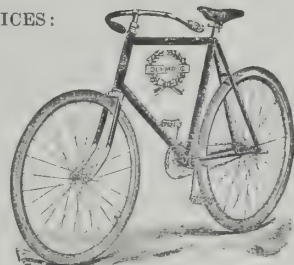
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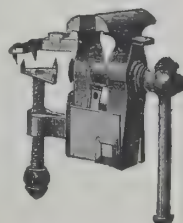
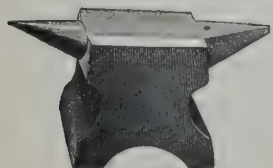
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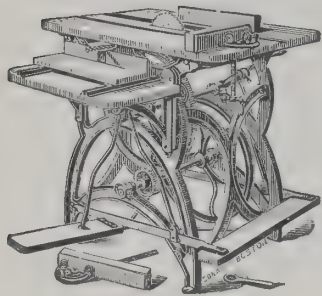
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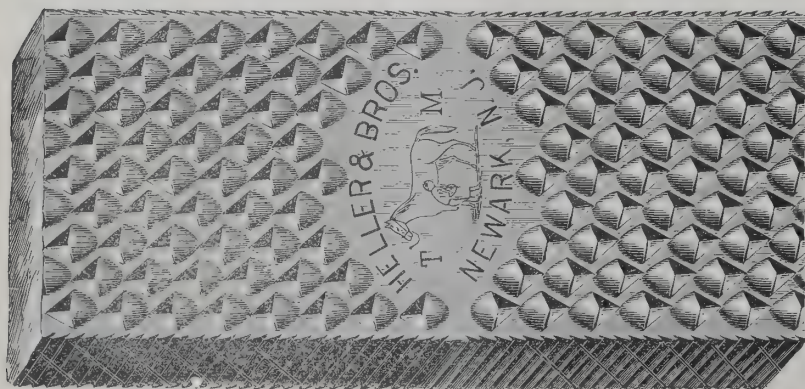
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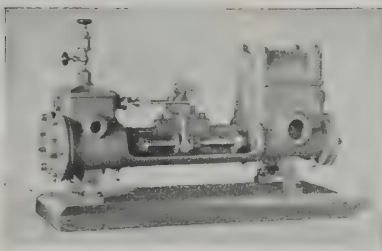


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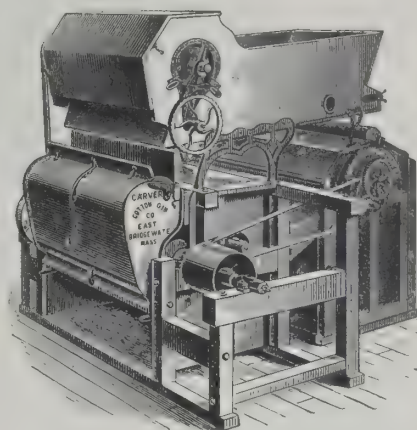
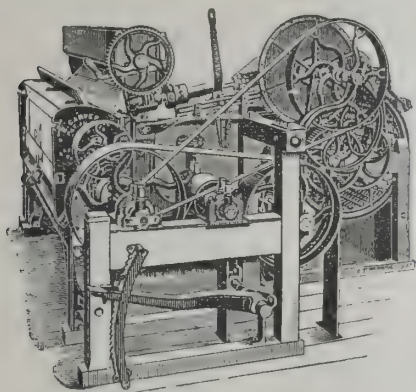
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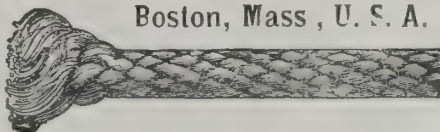


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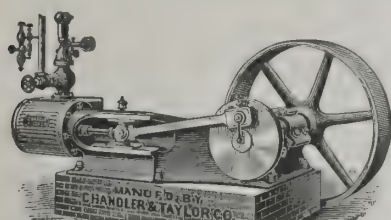


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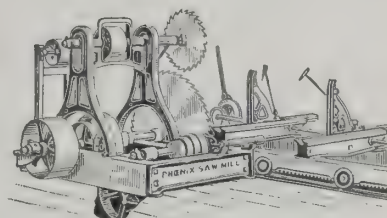
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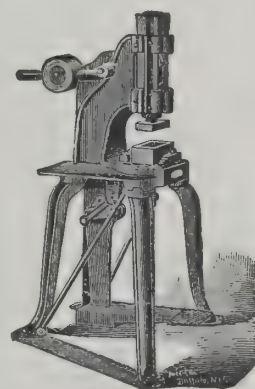
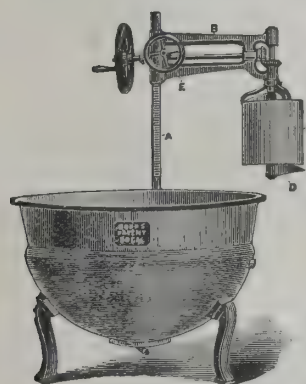
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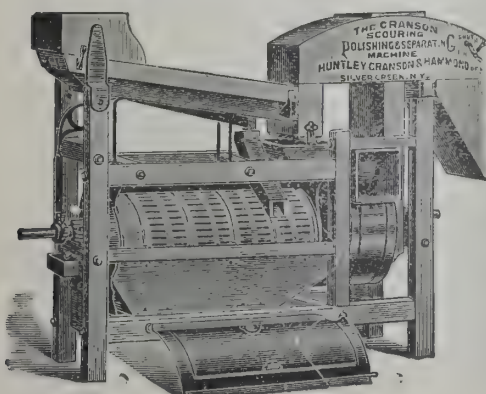
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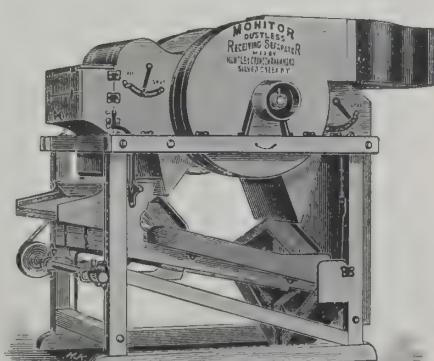
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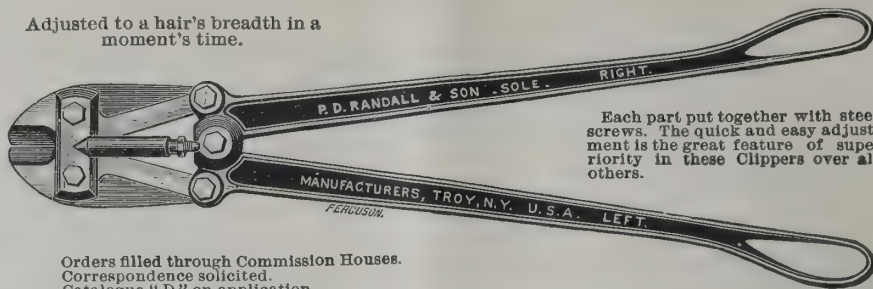
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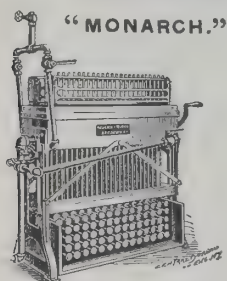
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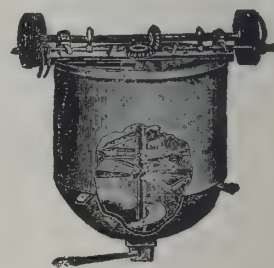
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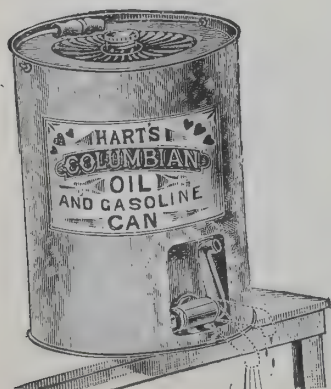
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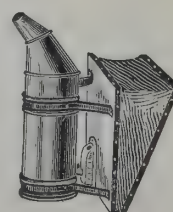
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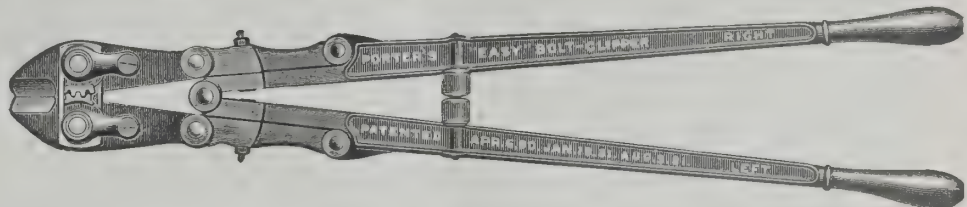
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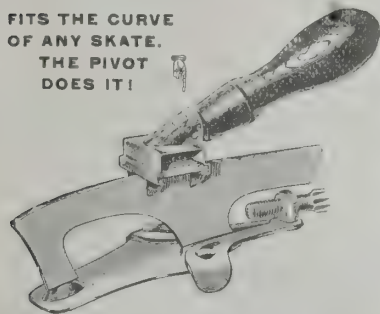
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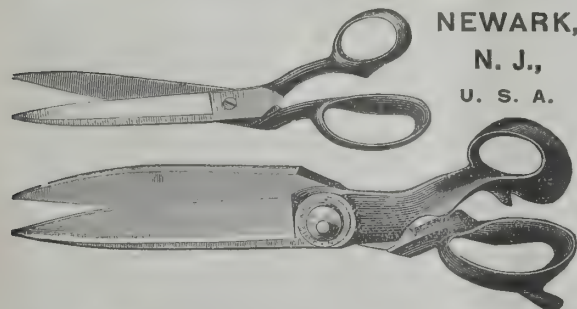
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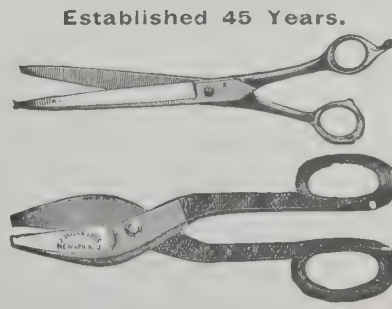
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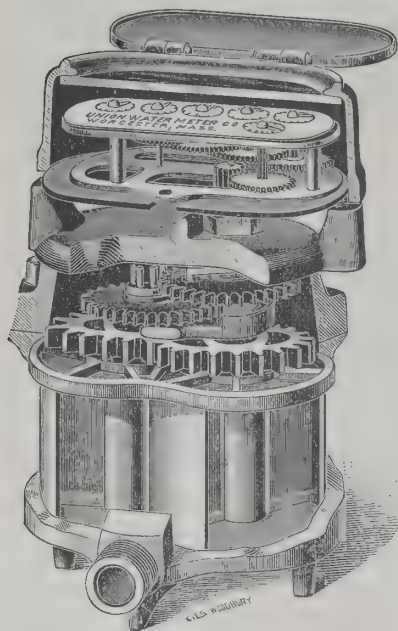
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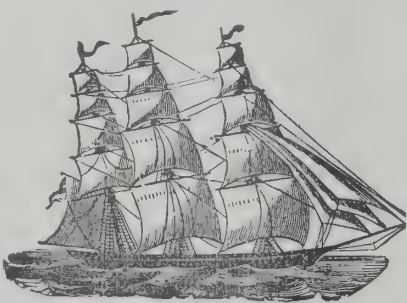
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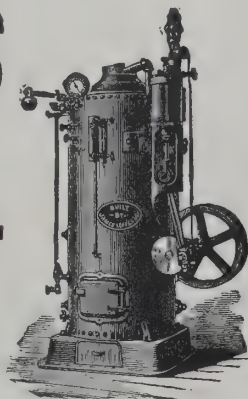
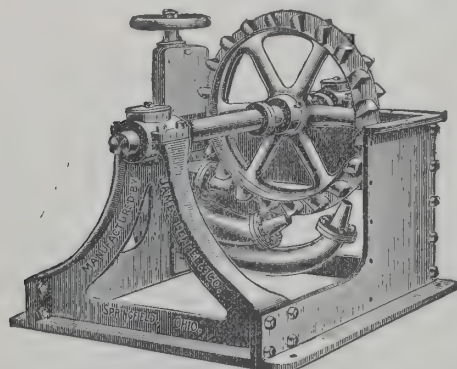
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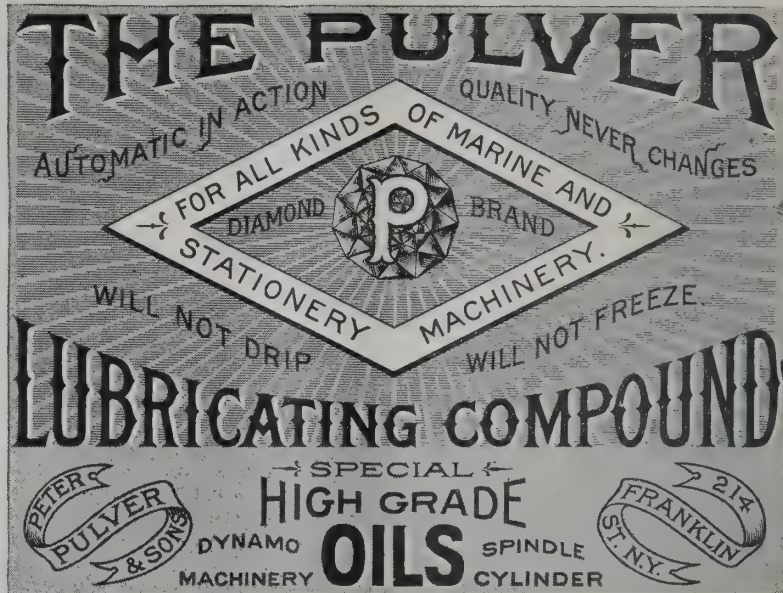
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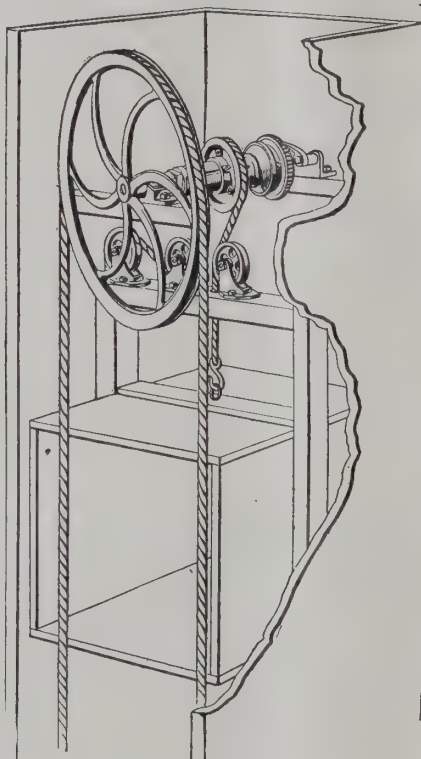
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A perfect substitute for pitch

NEW JERSEY PAINT WORKS

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—it is splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shya."





Golden Rod Coffee.

The Shepard Manufacturing Co.

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FOR THE PRESERVATION OF THE
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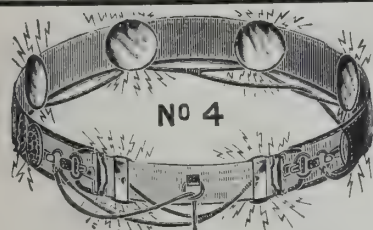
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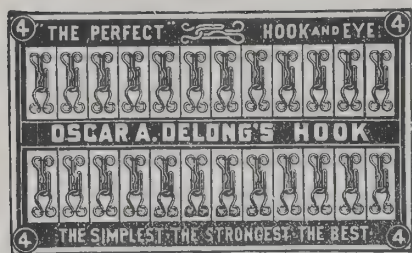
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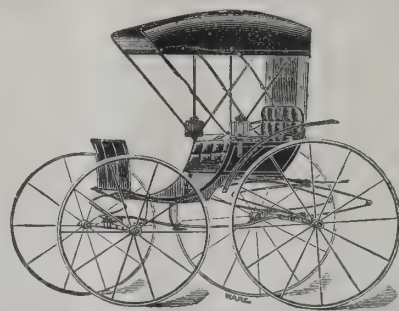


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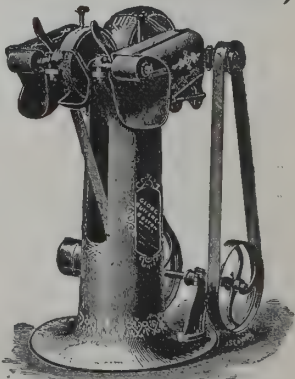
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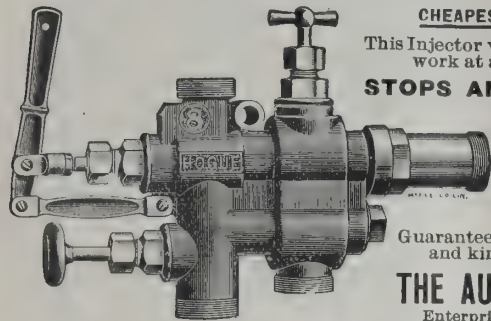
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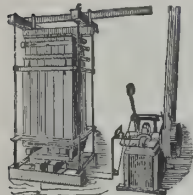
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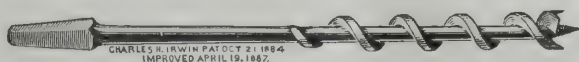


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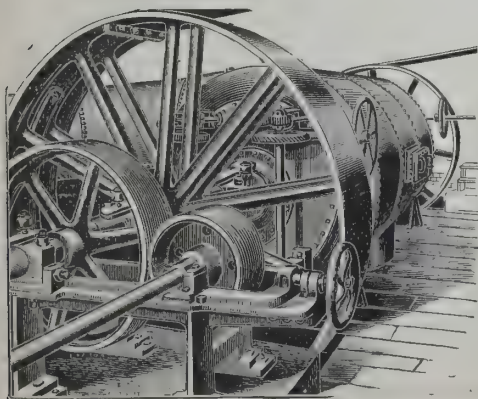
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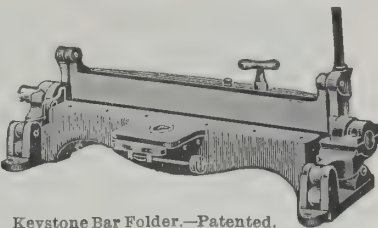
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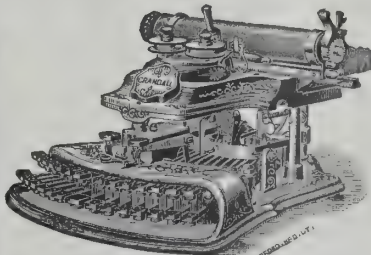
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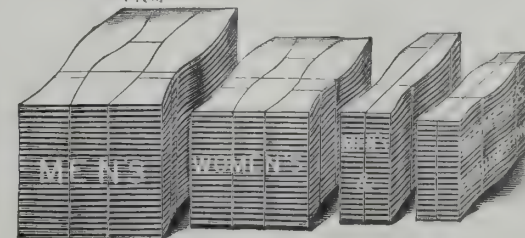
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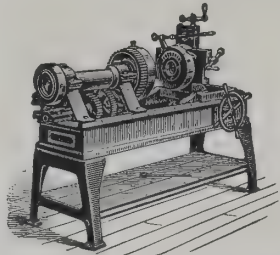
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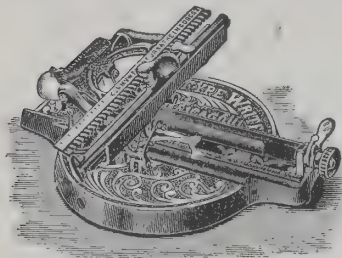
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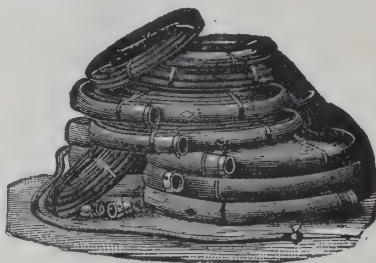
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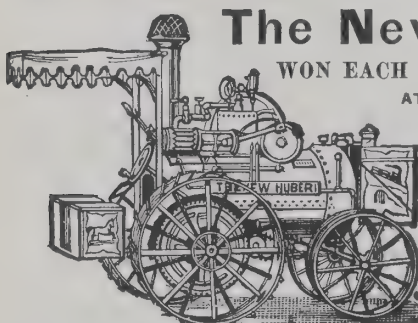
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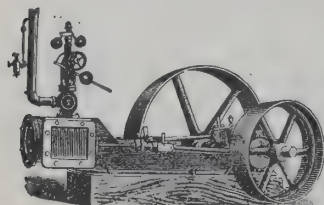
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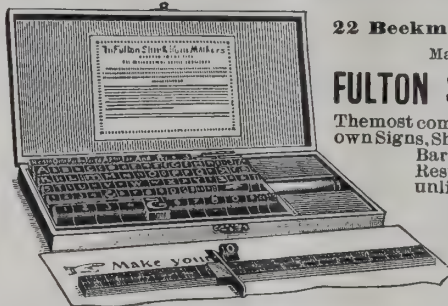
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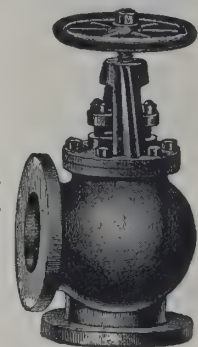
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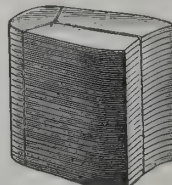
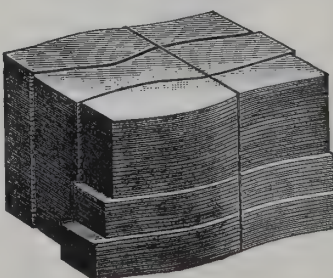
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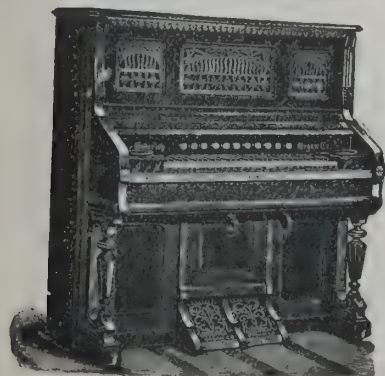
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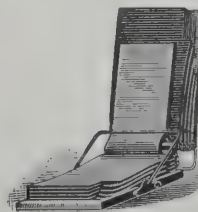
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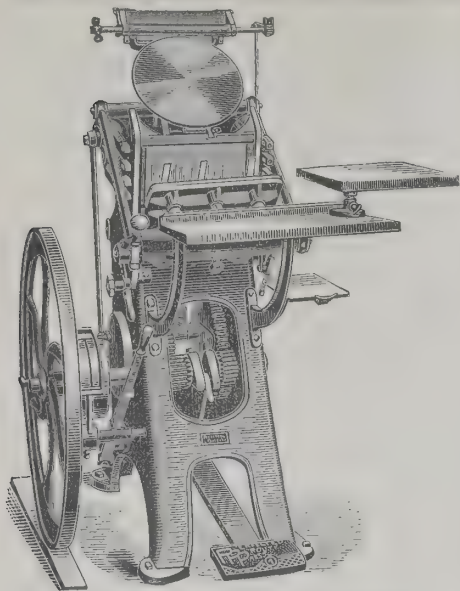


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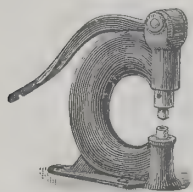
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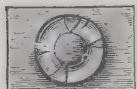


Showing Rivet divided in the centre after being set.



HAND SET

PLAN OF CLINCH



Showing the full size of the No. 3 Harness Rivet.

TUBULAR RIVETS

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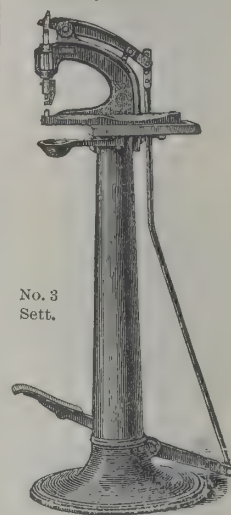
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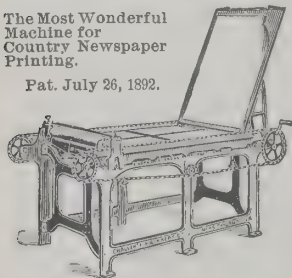
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An impression is taken by each forward or backward turn of the crank.

The press runs so easily that a boy or girl of fifteen can operate it. It occupies least floor space. It is the fastest hand cylinder made. It is lightest, although built of iron and steel.

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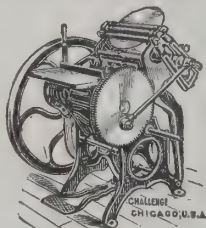
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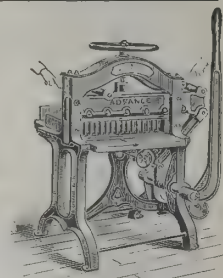
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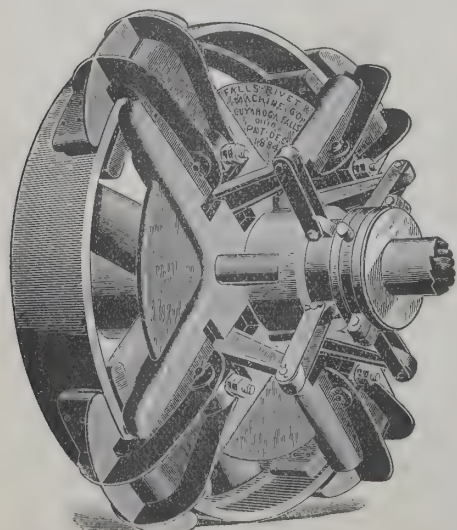
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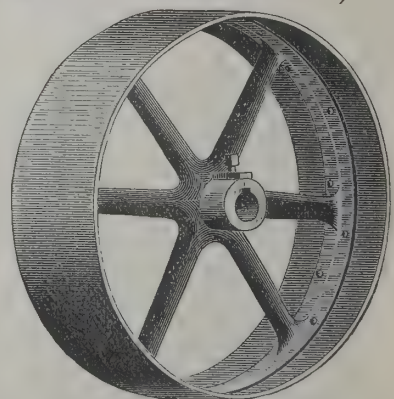
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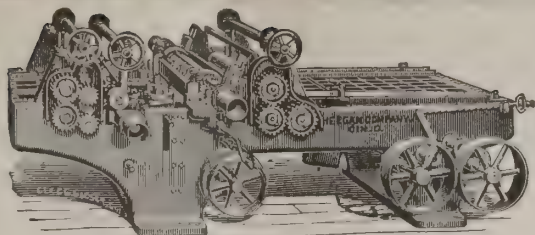
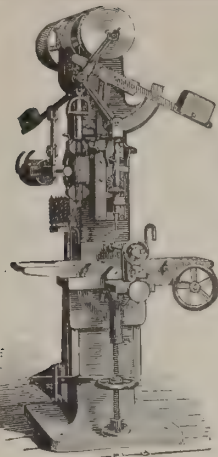
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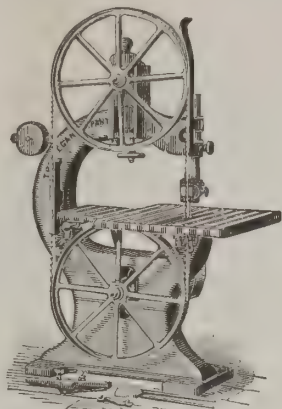


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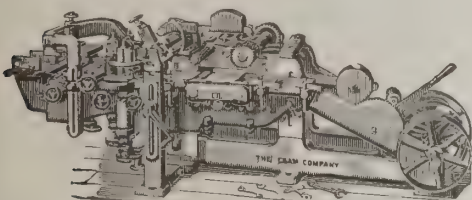


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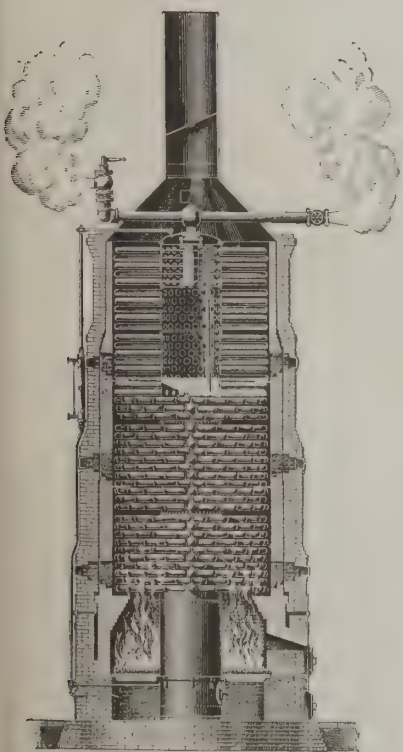
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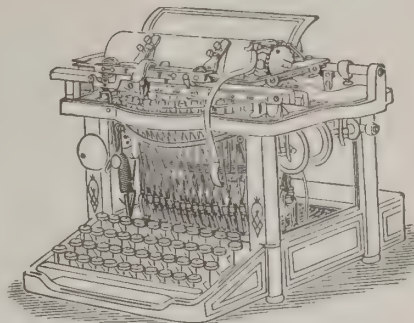
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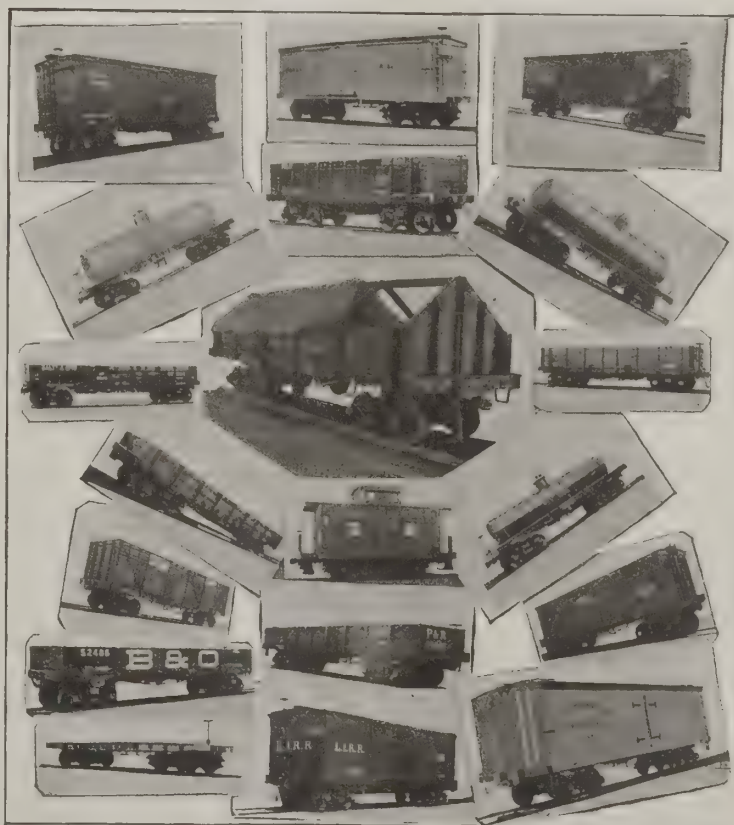
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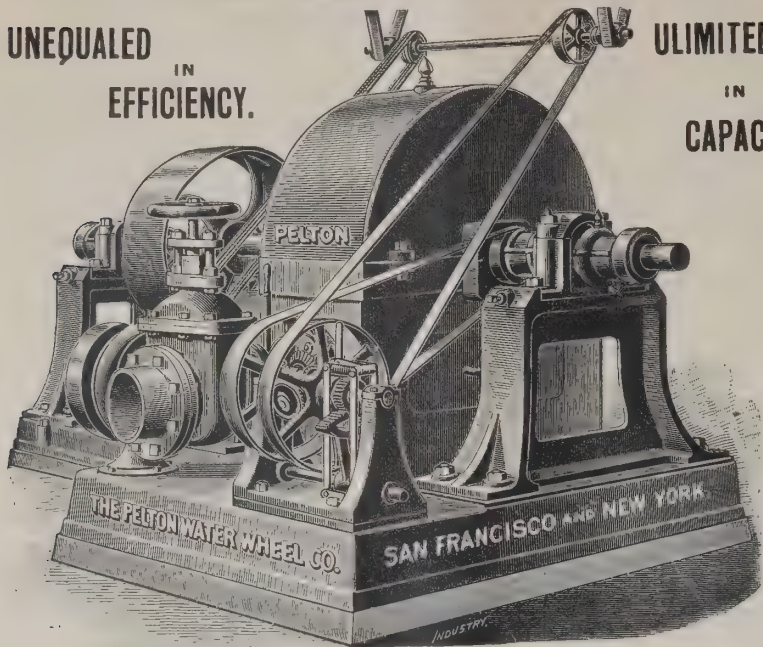
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
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Affords the most simple and reliable power for all kinds of mining and manufacturing machinery. Adapted to all conditions and every variety of service.

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
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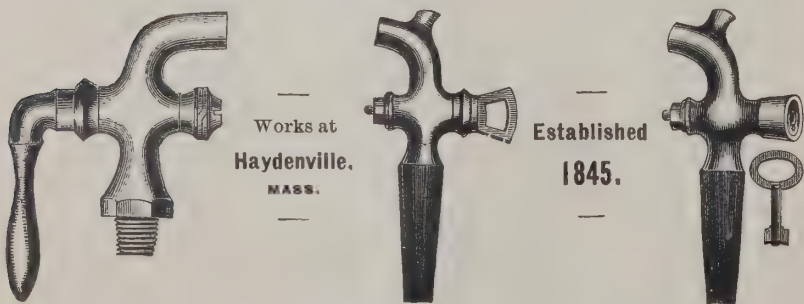
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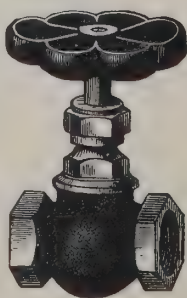


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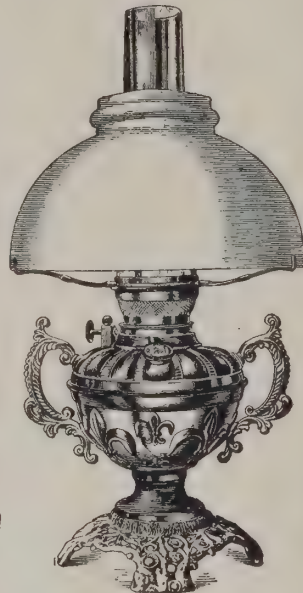
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THE ORIGINAL IS THE BEST.

Royal Central Draft Lamp.

This Lamp has no Superior in the known world.

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"Gilt Edge" Oil Polish, for ladies' and misses' shoes, is far superior to all others, as it blacks, polishes, softens and preserves the leather. Bottles hold about double the usual quantity. Price per gross, \$18.00 discount, 10 per cent.

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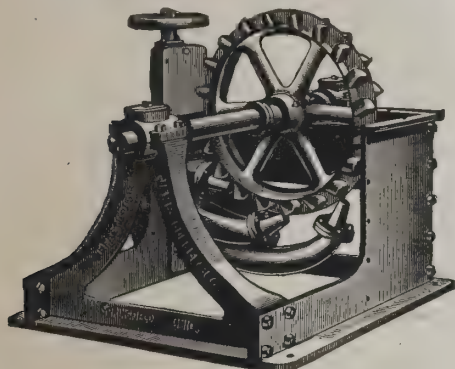
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ALL SIZES AND STYLES

FOR ALL HEADS

From 2 Feet to 2000 Feet.



Steam Engines
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Tarr's Copper Paint is extensively used for the bottoms of all classes of Wooden Vessels and Boats in this Country and Abroad. Its sales have constantly increased for the past fifteen years, and it is a perfect substitute for Copper Sheathing.

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This Paint has been
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and is superior to any
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Coat No. 1 prevents
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This compound is
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in their classes in America.

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FOR ALL KINDS OF MARINE AND
STATIONERY MACHINERY.

WILL NOT DRIP

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LUBRICATING COMPOUND

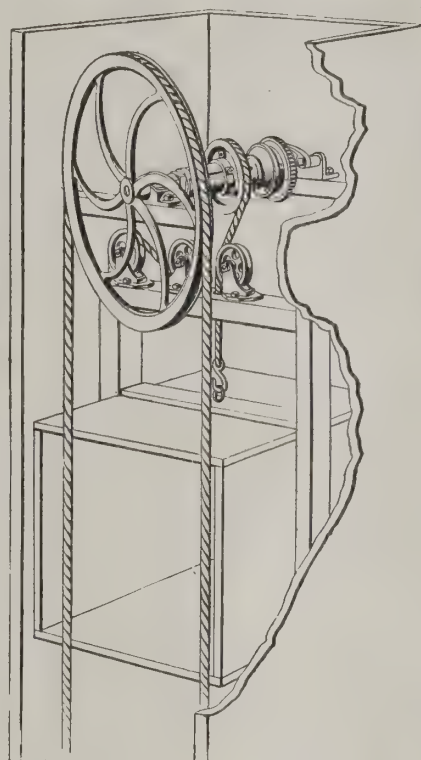
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PETER PULVER & SONS DYNAMO MACHINERY

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Dumb Waiters

LEAD ALL OTHERS FOR

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Automatic Hand and Belt

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Elevators.

Catalogue Free.

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So our testimonials say.

We guaranteed this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

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NEW JERSEY RED COPPER,

For yachts. Brightest color made.

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A perfect substitute for pitch

NEW JERSEY PAINT WORKS

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REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shya."



We received the Highest Honors at Columbian Exposition and were the Only Lamp Prize Winners.

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Every dealer should buy the "AMERICAN" Centre Draft Burner, which is in every particular
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7th—No dangerous bayonet lock catch, but certainty and security of action in our large double-threaded burner. There is none like unto it, making this absolutely the only safe centre draft lamp.
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11th—Every lamp tested before leaving our Works, and guaranteed perfect and satisfactory in every respect.
12th—The last, but not the least, because "The American" received the highest award at the World's Fair, and was thus decided by impartial and expert judges to be the best lamp in the world.

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EASY TO REWICK.
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THE AMERICAN EXPORTER.

ALLEN RIPLEY FOOTE, EDITOR.

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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	Dietz, R. E. Co.—Lamps..... 21
American Chemical Mfg. & Mining Co.—Shoe Blacking..... 39	Diamond Cutlery Co.—Scissors Sharpener..... 39
American Lamp & Brass Co.—Lamps..... 8	Diamond Hardware Co.—Stove Polishing Mitten..... 31
American Writing Machine Co.—Caligraph..... 4	Dodd & Williams—Cut Soles and Leather..... 45
Armitage-Herschell Co.—Steam Riding Gallery..... 43	Donegan & Swift—Engines, Injectors, etc..... 47
Ashcroft Mfg. Co. Indicators, Gauges, etc..... 16	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 37
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Doig, W. S.—Box Nailing Machines..... 44
Automatic Injector Co.—Boiler Injectors..... 43	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc..... 23
Ayer, J. C. Co.—Patent Medicines..... 25	Douglas, W. B.—Pumps, etc..... 26
Ball & Co., Dayton—Shoe Lasts..... 40	Douglass, D. De Forrest—Artificial Limbs..... 43
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Douthitt, J. F.—Tapestry Paintings and Decorations..... 33
Barnett Co., G. & H.—Files..... 41	Eagle Cotton Gin Co.—Cotton Gins..... 31
Barton Mfg. Co.—Rubber Stamp Outfits..... 45	Eco Magnetic Clock Co.—Electric Clocks..... 45
Baxter Register Co.—Cash Registers..... 21	Electric Emery Wheel Co..... 45
Baxter, Stoner & Schenkelberger—Cut Soles..... 31	Empire Moulding Works—Mouldings and Frames..... 31
Bay State Cut Sole Co..... 43	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Bignall & Keeler Mfg. Co.—Pipe Threading and Cutting Machines..... 44	Estey Organ Co.—All kinds of Organs..... 2
Blanchard Machine Co.—Disintegrators..... 21	Falls Rivet & Machine Co.—Pulleys, Shafting, etc..... 46
Brown & Co., B. F.—Shoe Dressing..... 41	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Buffalo Cycle Co.—Bicycles..... 40	Faxon & Co.—O. J. Bicycles..... 23
Buffalo Portable Steel House Co.—Steel Cottages, Houses, etc..... 45	Flagg Mfg. Co.—Shoe Machinery..... 42
Burgess, Edward A.—Box Nailing and Trimming Machines..... 45	Foster Mfg. Co., F. W.—Ball Cocks..... 25
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 43	Fraser Mfg. Co.—Manufacturers of Coffee Machinery..... 31
Carver Cotton Gin Co..... 37	Fulton Stamp Works—Rubber and Metal Stamps, etc..... 44
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 38	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 7
Chamberlin Mfg. Co.—Stump Pullers..... 44	Gleason & Bailey Mfg. Co.—Fire Department Supplies..... 21
Chandler & Taylor Co.—Steam Engines and Boilers..... 37	Globe Buffer Co.—Shoe Machinery..... 42
Cincinnati Tool Co.—Wood Drills..... 39	Goderich Organ Co.—Organs, Stools, etc..... 45
Collins Plow Co.—Plows, Hay and Straw Presses, etc..... 29	Goubert Mfg. Co..... 16
Columbus Phaeton Co..... 4	Gould Packing Co.—Steam and Water Packing..... 23
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 40	Goulds Mfg. Co.—Pumps of all kinds..... 25
Crandall Machine Co.—Typewriters..... 43	Gout Mfg. Co., David D. A..... 45
Crosby Steam Gage and Valve Co.—Safety and Water Valves..... 23	Grafton Stone Co.—Grindstones..... 48
Cunningham Mfg. Co.—Desiccated Egg Food..... 43	Green Bros.—Watchmakers and Jewelers' Tools and Supplies..... 35
Deane Steam Pump Co.—Steam Pumps..... 37	Hancock Inspirator Co.—Boiler Feeders..... 47
Dederick, P. K. & Co.—Agricultural Implements..... 45	Hart Mfg. Co.—Faucet Can..... 40
De la Balze Hermanos..... 42	Hartshorn Co., Stewart—Shade Rollers..... 2
De Lamater Iron Works—Hot-Air Pumping Engines..... 41	Hauthaway, C. L. & Sons—Shoe Dressing..... 8
De Laval Separator Co.—Cream Separators..... 25	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 6
DeLong, Oscar A.—Hook and Eye..... 42	Hazelton Boiler Co..... 5
Diago, Frederico C.....	Heller & Bros.—Files, Rasps, etc..... 38
	Holmes & Edwards Silver Co.—Spoons and Forks..... 35
	Horrocks Desk Co..... 43

PAGE	PAGE
Houchin & Huber—Soap and Candle Machinery..... 40	Porter, H. K.—Bolt Clippers..... 39
Huber Mfg. Co.—Traction Engines and Grain Threshers..... 44	Powell Co., The Wm.—Valves..... 42
Huntley Mfg. Co.—Flour Mill Machinery..... 37	Pulver & Sons, Peter—Lubricating Compound..... 7
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 7	Randall & Son, P. D.—Bolt Clippers..... 40
Irwin Auger Bit Co..... 43	Rhyder, W. J.—American Commercial Agency..... —
James & Co., George—Soles, Taps, Heels, etc..... 44	Root Co., A. I.—Beekeepers' Supplies..... 40
Jeffrey Mfg. Co.—Detachable Chain Belting..... 42	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 46
Kalamazoo Railroad Velocipede & Car Car..... 46	Samson Cordage Works—Cords of all kinds..... 21
Kelly Axe Mfg. Co.—Axes..... 42	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Kelsey & Co.—Printing Presses..... 38	Seymour Cutlery Co., Henry—Shears and Scissors..... —
Keystone Mfg. Co.—Agricultural Implements..... 26	Schack, W. G.—Bicycles..... 44
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Schamandjian, D..... —
Knowles Loom Works—Looms..... 31	Schollhorn Co., Wm.—Shears and Scissors..... 23
Layman, H. D.—Pneumatic Boats..... 38	Schrader's Son, A.—Diving Apparatus..... 45
Leffel, Jas. & Co.—Water Wheels and Steam Engines..... 7	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
Marston & Co., J. M.—Foot and Hand Power Saws..... 38	Silver Lake Co.—Braided Cordage..... 37
Martin & Co., W. E.—Shoe Dressing..... 43	Simonds Mfg. Co.—Saws..... 38
Mast, Foss & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 26	Slatington-Bangor Slate Syndicate—Roof Slate..... 45
McCammon Piano Co..... 25	Smith & Co., H. D.—Carriage Hardware..... 3
Milton Car Works—All kinds of Freight Cars..... 5	Standard Radiator Co..... 39
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Standard Tool Co.—Twist Drills, etc..... 23
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 42	Stanley Works, The—Brackets..... 21
Munger Cycle Co.—Bicycles..... 41	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines..... 25
Myers, S. F. & Co.—Jewelry of all kinds..... 35	Storm Mfg. Co.—Dumb Waiters, etc..... 23
National Meter Co.—Water Meters..... 19	Stubbs' Mercantile Agency..... 41
National Starch Mfg. Co.—Maizena..... 29	Sturtevant Co., B. F.—Pressure Blowers..... 47
New Jersey Car Spring & Rubber Co..... 44	Sturtevant, F. C.—Egg Food and Sheep Dip..... 42
New Jersey Paint Works—Copper Paint, etc..... 7	Tanite Co., The—Emery Wheels, Whetstones, etc..... 45
New Process Twist Drill Co..... 23	Tarr, James H.—Copper Paint..... 7
New York Metal Ceiling Co.—Metal Ceilings..... 42	Thomas & Co., T. B.—Hammocks..... 47
Niagara Stamping and Tool Co.—Tools and Machinery for Tinsmiths and Sheet Metal Workers..... 43	Thomson Meter Co.—Water Meters..... 48
Nicholson File Co.—Files..... 21	Thresher Electric Co.—Electrical Machinery..... 4
Norman & Evans—Steam Merry-go-rounds..... 45	Tubular Rivet & Stud Co..... 46
Odell Typewriter Co.—Typewriters..... 44	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 21
Osborne & Co., C. S.—Saddle and Harness Tools..... 43	Union Sand Paper & Emery Wheel Co..... 40
Pairpoint Mfg. Co.—Silver Plated Ware..... 2	U. S. Buggy & Cart Co.—Wagons and Carriages..... —
Partrick & Carter Co.—Electrical Supplies..... 41	U. S. Playing Card Co..... 2
Pedrick & Ayer Co.—Machinery..... 16	Vetter, F.—Typewriter Desks, etc..... 45
Pelton Water Wheel Co..... 6	Wagen, John F.—Importer..... 39
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	Walker & Pratt Mfg. Co.—Steam Kettles..... 45
Pike Mfg. Co.—Oil, Scythe, Razor Stones, etc..... 48	Waterbury Watch Co.—Watches of all Grades..... 35
Plume & Atwood Mfg. Co.—Lamps..... 6	Waterous Engine Works Co.—Saw Mill Machinery..... 19
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 41	Weston Electrical Instrument Co.—Electrometers..... 42
	Whitemore Bros. & Co.—French and Patent Leather Polish..... 6
	Wilkinson Plough Co.—All kinds of Plows..... 45
	Wiss & Sons, J.—Shears and Scissors..... 39
	Wood & Paige—Incubators..... 31
	Woodsum Co., B. H.—Tacks and Nails..... 23
	Woolsey Paint and Color Co., C. A.—Paints, Colors, Kalsomines, etc..... 41
	Wyckoff, Seaman & Benedict—Remington Typewriter..... 5

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to *originate trade*, and not to *execute orders*, which is properly the function of the commission merchant.

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THE JOHN C. COCHRAN CO.

THE ISSUES, 1896.

WITH the new year have come disturbances, centring in Venezuela and the Transvaal, startling the world with flashes that indicate war between the United States and Great Britain on one hand, and Germany and Great Britain on the other hand.

THE AMERICAN EXPORTER for November, 1895, asserted the right of every individual and nation to the enjoyment of peace as a fundamental condition necessary for the pursuit of peaceful vocations, the development of commerce and the promotion of prosperity.

THE RIGHT TO PEACE THE REAL ISSUE.

While a threatened infringement of the Monroe doctrine has compelled the United States to take an interest in the Venezuelan boundary question, the real issue is the right of nations to peace. To establish this right a demand is made for the incorporation of the principle of arbitration into international law. The demand as made is that Great Britain shall submit its boundary dispute with Venezuela for settlement by arbitration, and that it shall not acquire territory by force.

But one outcome to this demand is possible. A settlement will be effected by peaceful methods, and a precedent will be established that will exert a powerful influence for the peaceful settlement of all international disputes that may occur hereafter. A treaty of arbitration will be negotiated between nations, and in the future the affairs of men will be ruled by reason, not brute force.

If the influence of intelligent people in all countries is not equal to the task of so ordering events as to make this consummation certain, then there will be a war, widespread and destructive, involving interests so vast and far-reaching that the treaties negotiated for its settlement will necessarily be designed to establish a permanent peace by the judicial methods of arbitration. Let events take what course they may, the end of the era of control by force is in view, the beginning of an era of control by reason is at hand.

SOURCES OF POWER.

The discussion of these questions requires all who wish to form an intelligent opinion to become correctly informed regarding the sources of national power. Comparatively few have any proper conception of the vast resources of the American republic. The assertion made by its President, and sustained, without a dissenting vote, by its Congress, that the United States will not permit a European power to acquire by force the territory of any nation in the Western Hemisphere, has created a universal desire to become acquainted with its sources of power. Such knowledge is of the highest importance to the people of other countries, whether it be used as a guide to their actions in a struggle for supremacy in war or in commerce. In this behalf THE AMERICAN EXPORTER presents in this issue a brief statistical statement for the United States of America.

No adequate conception of this country can be gained by study. Every person who desires to be correctly informed must explore its resources and capabilities for himself. Any one who will spend a few weeks in the United States for the purpose of studying existing and possible conditions affecting his home interests will be benefited to a degree and in ways he cannot understand without making the tour. To those desiring to make such a tour of inspection with the least outlay in time and expense, and with greatest certainty of success, THE AMERICAN EXPORTER offers its free services to arrange an itinerary which can be followed after arrival that will enable them to find with least trouble the persons, the establishments and the resources they most wish to see.

WORLD-WIDE INDUSTRIAL READJUSTMENTS.

This suggested personal inspection of the resources of the United States is most important in view of the world-wide industrial readjustments that are taking place. Civilization has reached a point of development where conditions created and maintained by the use of force during centuries of militarism must be superseded by normal conditions now asserting themselves. Commerce must become more and more an exchange of finished commodities.

Instead of transporting raw materials from one nation to another for manufacture, and then to be returned to the place of origin for consumption, each nation will seek to manufacture its own natural products and to export finished commodities only. The industrial system founded upon conquests and colonial dependencies must come to an end. It is at variance with the principles that govern normal industrial conditions.

In December, 1895, the United States closed its first century of commercial freedom. With the commencement of its second century it notifies the world that it wants no extension of territory. It seeks no conquest by force. It stands for the principle that each person and each nation has a natural right to freedom to follow the vocations of peace and commercial development. It demands that this right shall be guaranteed by the intelligent opinion of all civilized people. It seeks to establish commercial relations with all people and all nations based on mutual benefits. It does not desire political or martial control. Guided by these principles, it now undertakes to acquire the commercial supremacy of the world.

DECADENCE OF GREAT BRITAIN'S COMMERCE.

ONLY a few days ago Lord Salisbury made the unqualified assertion that no one can exclude England from that fertile and commercial region, the Far East, nor beat it in the markets of the world.

In commenting on the British trade returns for October, 1895, *The British Trade Journal* says: "A continued contraction in the exports to India is again a conspicuous feature. An examination of the new blue-book on the trade of British India for the past 12 months throws much light on the exact position of our continental competitors in the race for supremacy. Our percentage of the total import and export trade of India has declined from 48.0 in 1893-4 to 47.4 in 1894-5. As exporters of manufactured goods in India we have but to trace the history of the trade with India in iron and steel during the past 12 years to show that the competition of the Continent is becoming a matter of national concern to the trade of Great Britain.

"INDIA'S TRADE IN IRON AND STEEL.

"England has lost the monopoly of the trade in these two metals which it at one time possessed. India's imports of Belgian iron have grown from 86,000 cwt. in 1883-4 to 1,176,179 cwt. in 1894-5; of Belgian steel from 10,900 cwt. in 1883-4 to 448,000 cwt. in 1894-5. Its imports of German iron have increased from 9,400 cwt. in 1883-4 to 102,300 cwt. in 1893-4, and of steel from 1,600 cwt. 10 years ago to 100,000 cwt. in 1893-4. On the other hand, English exports of iron to India have declined from 3,470,000 cwt. in 1883-4 to 1,956,000 cwt. in 1894, though steel has risen from 240,000 cwt. in 1883-4 to 369,000 cwt. in 1894-5, or about 90,000 cwt. below the quantity imported from Belgium.

"This is conclusive evidence of the fact that, as regards large classes of cheap iron and steel, Belgian and German competitors have taken the position which England formerly held in India. Twelve years ago India's imports of continental iron and steel were quite insignificant in comparison with its imports from England, whereas at the present time of the total quantity of iron imported more than half is obtained from Belgium, while in the case of steel the imports from Belgium actually exceed those from the United Kingdom.

"INDIA'S TEXTILE TRADE—COTTON.

"Still more formidable is the competition with England's textile trades which is growing up in India itself. While the population of India has during the past 10 years increased by 30,000,000, its imports of cotton yarns and cotton goods have during the same period shown little signs of expansion. As India draws cotton supplies from no other country except England, it is evident that the large increase in consumption which must have taken place has been met from Indian mills. These mills are increasing in importance every year, and at the present time can boast of 3,710,900 spindles and 34,000 looms. In addition to supplying the Indian home market they exported last year to the Far East goods aggregating

gating in value Rs. 7,000,000. This amount is no doubt insignificant in comparison with English cotton sales in that fertile commercial region, but it marks the beginning of the end of England's monopoly of the cotton trade in the Far East. The natural advantages of low cost labor and material which India possesses in a remarkable degree render it a rival for the cotton textile trade of the Far East with which England, in the nature of things, has no inherent ability to cope.

"INDIA'S TEXTILE TRADE—JUTE.

"Another important staple industry in which the competition of India has already told heavily against England is the manufacture of jute. The growth of this industry in India has been extremely rapid. Its export of gunny bags during the last 10 years has increased from 63,760,000 to 143,444,000, and of cloth from a little over 20,000,000 yards to over 103,000,000. Many new mills are now in the course of erection. Calcutta, with the advantages it enjoys in its proximity to the sole source of raw material supply, bids fair to become the most important centre in the world for the distribution of manufactured jute."

These three illustrations are sufficient to show the decadence of Great Britain's commerce in the Orient.

THE COMMERCIAL DEVELOPMENT OF CHINA.

IT is impossible to predict the effect upon China of its treaty with Japan, by virtue of which a beginning is made in opening China to foreign commerce. That it will lead to a tremendous industrial evolution which will affect the commerce of the world, the extent of which cannot be measured in prospective by any familiar standard, does not admit of doubt.

The nineteenth century will be memorable in history for the organization and development of civilized governments in new countries by the descendants of settlers and emigrants from Europe who have displaced native populations and created a new industrial and commercial life. These new nations have drawn to themselves the best brain and blood of the older countries, have been free to profit by the experience of the ages, and have outdistanced their progenitors in the acquisition of facilities that bring comfort, power and refinement to the masses.

The twentieth century will be signalized by the march of Mongolian nations from the rear to the advance of civilization. They will accept the industrial teachings of the Caucasians and will compete with them for commercial gains upon their own terms and with their own weapons. Indications are not lacking that China will soon assert its powers and enter upon the enjoyment of its newly found freedom.

It is reported that Hu Yü-fen, ex-Judge of Karangsi, has memorialized the throne, recommending the immediate sanctioning by the Emperor of a Government bank, the opening of mines throughout the whole Empire, railways from north to south and east to west, and the establishment of military, naval and scientific colleges in all the provincial capitals and large seaport towns. The Emperor has submitted the memorial to the "Six Boards and Nine Ministries" of the Empire.

Japan accomplished more for Asiatic civilization at one stroke than a century of European diplomacy and arms. Cotton mills are now in operation and in course of construction under Japanese, English and American management. Two hundred and sixty-five thousand spindles will soon be working in Shanghai. The sight of labor being performed by machinery will be a revelation to the natives. When once familiar with it the prejudices of past conservative traditions will vanish, then will come the real rush of a new life, the alliance of the youngest and the oldest nation for the commercial conquest of the world.

The employment by China of Mr. John W. Foster, ex-Secretary of State for the United States, as the advisory counsel for the Chinese Government in effecting a treaty of peace with Japan has a meaning which Japan, if wise, will learn and act upon. The relations between the Governments of the United States and China well

illustrate the position of this country in the society of nations. The United States has no ambition for territorial expansion; it has no opium to cram down the throats of the Chinese at the mouth of a cannon; in fact, all the reasons which the Chinese Government—and the Japanese Government for that matter—has to fear Russia, Great Britain or France are conspicuously absent in the case of the United States. This is the only great government whose proffers of friendship the Chinese, or any other nation, have no cause to suspect. A government founded to establish justice between individuals will be guided by the principles of justice in its dealings with nations. Its sense of justice, not fear of force nor greed for gain, is a security for weak and a barrier to arrest the encroachments of strong nations. This entitles American citizens to a preference when they offer their genius, skill, energy and capital to help develop the industrial and commercial systems of other nations. These services can be accepted from American citizens by the people of any nation without fear that their benefactors and teachers are actuated by ulterior motives against their government. The probabilities are, Japan will learn this lesson through bitter experience rather than by the help of reason.

AN AMERICAN RAILWAY FOR CHINA.

A concession from the Chinese Government to build a line of railway from tidewater to Peking has been obtained by a syndicate of American capitalists. The road will be about 280 miles long and will tap a valuable coal-mining district. Excepting the unfinished military railway from Tien-Tsin to Shanhaikwan, the projected line will be the pioneer railway of the Celestial Empire. It may be regarded as the first Chinese railway to be built with a view to the exploitation of commercial resources.

AN AMERICAN-CHINESE DEVELOPMENT COMPANY.

Now that a beginning has been made American capital will not be slow to avail itself of the great opportunities offered in China for its profitable employment. A company has recently filed articles of incorporation under the above title with the Secretary of State of New Jersey, for the purpose of constructing and operating steamship, railroad, telegraph and telephone lines in China. A beginning has now been made in an industrial transformation such as has never before been wrought in any nation.

HE WENT TO THE WRONG PLACE.

THE English are furnishing many illustrations of illogical conclusions drawn from incorrect industrial conceptions.

Mr. C. T. Hunter, of Belize, Honduras, recently visited London in the interest of a railway from Belize into the interior, for which he holds a concession from the Colonial Legislature. *The British Trade Journal* prefaces an interview with Mr. Hunter by saying:

"With Mr. Chamberlain's Roman policy of railway and road building the hope of a new era has sprung up in the Crown Colonies. The apathy of three centuries is to flee away, and those who have made their homes and bound up their destinies with the Colonies are taking heart again." Then it gives the assurance that "forty years of residence and business activity in the Colony have not affected Mr. Hunter's ardent patriotism as a Britisher, though it centres in the Colony where he has at heart everything that tends to develop its resources and improve its prosperity."

In closing the interview Mr. Hunter is asked as to the feeling created against Great Britain by the recent action of its fleet at Corinto. His reply as reported is:

"All that has blown over, and neither the Nicaraguans nor the Venezuelans bear any feeling of resentment to the prejudice of British goods. They buy them if they suit their purpose and if the price is right, regardless of any national sentiment." This shows Mr. Hunter to be a business man as well as a "Britisher," and inclines one to believe that if the goods will suit his purposes and the price is right he will buy them though not of British origin.

This shows that he went to the wrong place to contract for the construction and equipment of his railroad.

Honduras has adopted the American gold dollar as the standard currency of the Colony. It is being supplied with American cottons, drillings, hardware, axes, saws and machinery of all kinds, boots and shoes, furniture, electrical apparatus, pork and flour. All of these suit the purpose and the price is right. Why not railroad construction and equipment?

When the Romans built their roads they were the leading road builders in the world. Their work bears the impress of the originality, the genius and skill native in the Roman mind. A new era will undoubtedly spring up for the Crown Colonies when they enter—not upon “the Roman policy of road building,” but adopt the methods of railroad construction, equipment and operation successfully in use by the leading railroad builders of the world. If accomplishment is a proper test for superiority, then American achievement in developing a new country and supplying it with railroads and telegraphs stands without a rival, and places American railroad builders in a position of unapproached excellence. The building of 178,708 miles of railroad to England’s 20,908, at a cost of \$64,773 per mile against England’s cost of \$235,643 per mile, and in railroad freights 800,000,000 tons handled on American roads, while only 600,000,000 tons were handled on all of the balance of the roads in the world are achievements for which there are no duplicates. If these facts do not satisfy any mind that the “goods suit the purpose and the price is right,” can the conclusion be escaped that it draws illogical conclusions from incorrect industrial conceptions?

The patriotism of a “Britisher” is but a sentiment. If he is to hold his place in the business world his actions must be guided by sound business reasons. When Mr. Hunter and all other Colonial railroad promoters have secured full information in England as to the cost of constructing and equipping their proposed roads, good business prudence will send them to America to learn what railroad builders in the United States will do in the way of competing for their orders.

BRITISH-JAPANESE INDUSTRIAL WAR.

RECENTLY the Japanese Government applied to the Sheffield Technical School, England, for the admission of Japanese students into that institution. Its managers replied that the school will admit only students of British origin.

The Japanese Minister of Agriculture some time ago made an interrogatory in reference to the matter of direct trade between native Japanese merchants and foreign countries. A committee to consider the subject was appointed by the Tokyo Chamber of Commerce. This committee made its report a short time ago. Among other measures it recommends that: “Goods purchased from abroad by the Government be ordered through native merchants as far as practicable, and the proceedings for effecting such purchases be made as simple as possible.”

At about the time this report was made the British Vice-Consul of Tokyo officially advised British manufacturers not to establish direct trade relations with native Japanese firms. The policy advocated by the Consul is to compel the trade between England and Japan to remain in and pass through the hands of English firms in Japan.

These incidents clearly disclose England’s commercial policy in relation to Japan. It is designed to obstruct Japan’s commercial advancement in every way possible. England does not want Japan to develop its own resources and become the manufacturer of its own commodities, and much less to become a manufacturer of commodities that may be sold in the markets of the world in competition with those of English origin. Hence the refusal to educate Japanese students and the effort to keep Japan’s import trade out of the hands of native Japanese merchants.

This English policy is directly antagonistic to that of Japan and ought to work a complete cure of the purblind admiration of all things English from which the Japanese have for a long time

suffered. If they can overcome this defect they will be able to find in America technical schools, which the English cannot excel, at which their students may be educated. They will be certain to find American manufacturers able to supply any commodity that can be had from England, of as good quality and at as low a price. Native Japanese merchants capable of proving their right to business confidence will have no difficulty in establishing direct trade relations with American manufacturers. A large list of products indigenous to the soil and climate of Japan are not grown in the United States and make the bulk of Japanese export trade, while Japan must draw a large per cent. of the materials it requires for its manufactures from the United States. These conditions clearly indicate, instead of vainly attempting to overcome the commercial rapacity of the British lion by feeding it, that the correct policy for Japan to pursue is to keep out of its way sufficiently to starve it into submission. By such course only can Japan hope to gain a victory in its industrial war with Great Britain. This conclusion is true also for all countries and dependencies where corresponding conditions exist.

LOW-COST LABOR AND LOW-COST PRODUCTS.

PRACTICALLY the whole world is an open market for the competition of labor. In this grand arena nations and races are competing for industrial supremacy. The struggle is carried on by the migration of laborers from countries where they are poorly paid to countries where they are better paid, and by the exportation of the low cost products of low-cost labor to displace the high-cost products of high-cost labor.

The war between China and Japan induced a close study of industrial conditions in the Orient. This led to much speculation as to the possibilities of an invasion of Caucasian markets by low cost Mongolian labor and commodities. Four hundred millions in China, 300,000,000 in India and 40,000,000 in Japan, all willing to work for about 10 cents per day, payable in silver, worth in the world’s market but one-half the value of gold, seems like a working force of sufficient energy and based on a standard of living sufficiently low to submerge Caucasian civilization.

In estimating productive energy, however, as well as in estimating military strength, numbers only do not furnish a correct basis any more than do square miles of land. Intelligence and energy count for more than any other factors. The Caucasian can defend himself against an invasion of low-cost Mongolian labor and products with his low-cost machine labor. To devise and operate efficient machines requires a degree of intelligence and energy not possessed by low-cost Mongolian laborers. It was shown in *THE AMERICAN EXPORTER* for December, 1895, on the authority of Mr. Mulhall, the English statistician, that one man in the United States employed in agriculture can feed 250, whereas in Europe one man feeds only 30. It was also shown that the new wealth gained in the United States during a single generation—that is, in the period of 30 years between 1860 and 1890, a period it should be remembered which includes the great civil war—was not less than \$49,000,000,000, which sum is \$1,000,000,000 more than the total wealth of Great Britain.

The machine labor possessed by the United States is the lowest-cost labor in the world. A workman, whether engaged in taking products directly from the soil as in agriculture, lumbering or mining, or in manufacturing natural products for final use cannot successfully compete in the markets of the world unless he resorts to the use of efficient machines. Between those who use machinery the margin of advantage will be found in the intelligence and energy with which machines are operated. Poorly paid workmen are necessarily ignorant and inefficient. The world has learned that machine labor enriches its master much faster than slave labor ever did. The only defence for hand workers against machine workers is to become machine workers. The only defence of a workman with an inefficient machine against one having a machine of greater efficiency is in casting his old machine aside and obtaining one of greater productive capacity. The best defence the people of all other nations can make against the low-cost machine labor and ma-

chine products of the United States is to provide themselves with American machines and tools and learn how to install and operate them as efficiently as they are operated in America.

WHEAT IN ENGLAND.

THE low price of wheat in England is leading to much discussion as to how the English agriculturist can be saved from the effects of foreign competition.

When the Premier affirmed that the English could not be beaten in the markets of the world it is reasonable to suppose he did not make a mental exception of the English home market though speaking on England's foreign policy.

The fact that English agriculturists are advocating, with increasing urgency, the drastic remedy of an alteration in the customs duties for the purpose of imposing such duties on the importation of wheat as will enable English farmers to compete with the foreigner, is an indisputable admission that they are being beaten in their home market.

A brief review of the decline in the price of wheat in England will show how hopeless is the task of the English farmer when he undertakes to compete with foreign wheat growers without protection at the ports of entry.

From 1863 to 1883 the price of wheat fluctuated between \$1.98 and \$1.09 per bushel, as about average top and bottom of the market. In 1884 wheat from India became a competitor in the European market and brought the price down to \$0.91 per bushel. In 1894 Argentina had become a competitor of about three years' standing, first bringing the price down to \$0.76 per bushel and then to \$0.61 and under. The supply from this source in 1894 amounted to about 7,000,000 quarters.

Another cause of reduction in price is found in the increased size and speed of cargo steamers and the reduction of the cost of ocean freights and inland charges in the United States. The reduction in cost of transit alone is estimated at \$0.61 per bushel. This makes wheat growing profitable in the United States at greatly reduced prices.

The decline in the value of silver, affecting Indian exchange, and the gold premium in Argentina, are also causes that have tended to lower English prices in the past. One other cause is found in the protective action of France and other countries which has served to turn the foreign supply to Great Britain, thus completely submerging the unprotected English farmer.

In comparison with its three competitors named English wheat production for the year 1894 shows as follows:

	Bushels.
United States	460,267,000
India	258,459,000
Argentina	80,000,000
Total	798,726,000
Great Britain	61,038,000

FIGHTING FOR AMERICAN FLOUR.

ACCORDING to an English view of the Cuban rebellion, American flour is so far superior to Spanish flour as to furnish one of the underlying causes of the rebellion, based on the attempt to exclude American flour from Cuban markets through exacting high duties for its importation.

The *British Trade Journal* says: "In Cuba the reciprocity treaty with the United States rendered possible the use of American flour—a flour much superior in quality to that imported from Spain, which until then had the monopoly of the trade. When the treaty expired, in September, 1894, it was believed that Spanish flour would recapture the market. In this, however, the Spaniards were disappointed, for it seems that the American flour is so very much better that the trade will have it, although it now pays a much higher duty than that from Europe. This is accounted for by the fact that, as a rule, the owners of bakeries are not technical or practical bakers themselves. They employ journeymen or managers, who are paid according to the quantity of bread produced. Having dis-

covered that American flour requires but very little kneading, and that, consequently, they can produce the same quantity of bread in less time and with less labor than Spanish flour requires, they are naturally loath to readopt the latter article. As bakers in Cuba act together, and labor is scarce, the employers find it advisable to adopt their proposals. The difficulty may be solved perhaps by the use of kneading or mixing machines, but as it is there can be no doubt that the baking trade is anti-Spanish. It has to buy American flour at higher prices because of the higher duties, and it must increase the price of bread or reap smaller profits. At present United States flour pays duty at the rate of \$4 per 100 kilogrammes, with an additional 10 per cent., the Spanish article paying the 10 per cent. ad valorem only. That a large section of the community has in this matter alone a grievance against the authorities is obvious."

This shows that the Cuban rebellion is a direct result of a violation of normal industrial conditions by Spanish import regulations. The principle involved is that which requires a country to admit free of duty products that are not indigenous to its soil. A recognition of this principle will make the Cubans a contented and prosperous people. But under present conditions they are forced to fight for good and cheap flour in order that they may enjoy good and cheap bread.

NATURAL ADVANTAGES AND COMMERCE.

THE natural adaptation of climate and materials, also the tastes, dispositions and education of its people, give each country some peculiar advantages in which it may greatly excel. It is not claimed that every line of commodities can be produced in the United States at a lower cost than elsewhere. While there are a vast number of products that can be produced here much cheaper than elsewhere, there are, on the contrary, other products that can be supplied by other countries at a lower cost than they can be produced for here. Each locality and each country has its peculiar facilities. The merit claimed for the United States is that it possesses in an exceptional degree all factors required for the low cost production of a larger variety of commodities than any other country and the natural resources to enable it to supply the same in a practically unlimited quantity. This is the cause of its wonderful domestic commerce, which generates the aggressive force with which American manufacturers are entering the markets of the world.

No country can underbid the United States in supplying the woods, iron and steel which are the component parts of all machinery. With these natural advantages and the unlimited command of low cost mechanical power the American manufacturer is in position to produce machines for its own and other countries at the lowest level of cost. This is also true of all commodities requiring the same component parts for their manufacture.

The American export list shows that American manufacturers are winning success on the lines indicated. Agricultural implements, machinery, locomotives, hardware, sewing machines, carriages, watches, clocks, electrical apparatus and scientific instruments are leading the list of growing exports.

In the degree in which the United States excels in the power to produce commodities at low cost it also excels in its purchasing power as a buyer of commodities it cannot produce at as low a cost as some other country. An exchange of commodities, different in kind, each produced under conditions of best normal advantage, is the true basis of a commerce equally desirable to both seller and buyer. It is as much to the profit of a country to buy what it can obtain to advantage from the country to which it sells as it is to enlarge its sales. The country that does not buy where it sells holds its market with an unguarded hand.

WHEAT has become so dear at Tangiers, Morocco, that consignments of American flour are immediately sold at a good profit. The prospects are that Morocco will become a desirable market for American breadstuffs.

OPPORTUNITIES FOR CAPABLE YOUNG MEN.

THERE are great opportunities for capable young men to become interested in American enterprises. It matters little to what vocation a young man may be inclined, by coming to the United States and engaging with one of the best establishments in his chosen vocation for a sufficient period of practical work to fit himself to install, operate and repair the machinery used in that vocation, or to handle American products in his own country, he will provide himself with an endowment that he can always draw upon, but never spend.

Competition is forcing manufacturers everywhere to make the wages they pay as productive as possible, precisely as it compels the use of the most efficient labor-performing machinery. It is rapidly becoming understood that well-paid, intelligent workmen, using highly productive machinery, produce the lowest-cost commodities. Where complicated machinery is brought into use a high class of superintendence is imperatively demanded in machine tender, foreman or head of department. Competition demands increasing productive power at a decreasing rate of time and cost. In modern conditions of manufacture the best men and the best machines must be co-ordinate. The capable young men who will come to the United States and fit themselves by practical work to set up and operate American machinery of any class likely to be useful in their own country can easily secure engagements on their return at far greater wages than can be earned by those not so qualified.

This fact will be appreciated when it is known that there are American machines of high productive power which are never sold where competent machinists cannot be secured to operate them, and that workmen who are competent to operate them are always in demand at salaries as large as well-paid army officers receive.

Young men desiring to fit themselves to set up and operate any class of American machinery, or to represent American manufacturers in their native country, may learn of opportunities by addressing THE AMERICAN EXPORTER, with proper references.

AMERICAN TOBACCO IN ENGLAND.

THE total importation of unmanufactured tobacco into England for the year 1894 was 87,781,317 pounds, of which 76,105,900 pounds came from the United States. The gross amount received in duty, deducting the drawback for export, was £9,766,777.

Of manufactured tobacco the total quantity imported in 1894 was 3,811,402 pounds; the gross amount received in duty was £5,995,540. Of the total importation 27,605,235 pounds entered the port of London, and 52,763,152 pounds—nearly all American tobacco—arrived at the port of Liverpool.

Physical prohibition stands in the way of the successful cultivation of tobacco in England. The domestic growth of the plant was started about 10 years ago in consequence of the depressed state of English agriculture. In 1886 permission was obtained from the inland revenue authorities and a fair number of trials were made. The results were so encouraging that permission was again obtained in 1887. Every grower reported favorably on the results of his experiments and considered that the suitability of British climate and soil for the culture of tobacco was fully established. But when the authorities were approached with a view to enable the cultivation to be undertaken in a thorough, business-like way, and as a source of profit to the grower, no hope was held out that the facilities would be granted. It is stated that Lord Walsingham wrote to Mr. Goschen, then Chancellor of the Exchequer, and offered to pay a duty of \$250 per acre for the privilege of raising tobacco. Mr. Goschen informed his Lordship that the Treasury could not allow him to grow tobacco for a less duty than \$600 per acre. It is hardly to be expected that the Inland Revenue Department will consider favorable any scheme that will interfere with the annual collection of upwards of \$50,000,000, although the prohibition of domestic cultivation is a direct bounty to American tobacco growers.

AN EXAMPLE—AMERICAN BOOT AND SHOE MACHINERY.

WHEN the New England boot and shoe manufacturer equipped his factory with the highest type of labor-performing machinery and adapted his goods to meet the varying tastes of the people in the Northern, Southern and Western States, he opened a market requiring for its supply a greater output than can be consumed in any other single country. What he has done in America he is now commencing to do in England and Germany and will soon be doing in all other countries. The only defence manufacturers in other countries can make against this invasion is to buy American machines and have their workmen educated to operate them.

Experience shows that American shoe machinery in the hands of English workmen, who have not become expert in its use under the instruction of American superintendents, is not operated as efficiently as in American shops. A native workman with an American shop training ought to be better able to adapt boots and shoes to the tastes and requirements of the people of his own country than an American workman. By coming to America and acquiring expert knowledge in setting up and operating boot and shoe machinery, then returning to their own country and equipping factories with American machinery, native workmen can outstrip all domestic competitors and can place their establishments in a position to meet the competition of boots and shoes of American origin.

What is true of American boot and shoe machinery is equally true of a large list of other machinery and engineering work. The thought of progressive manufacturers seems to be exactly in the line indicated. In the United States, as in no other country, young men from all quarters of the world can acquire the technicalities and scientific principles that will enable them to lead the industries of their own country up to the level of American excellence and low labor cost of production. Every degree gained in lowering cost widens the area of demand in geometrical ratio. By this means both domestic and foreign markets are developed.

Gold and Silver Mining in the United States.

THOUGH not strictly within our province, it may not be amiss to merely refer to the wonderful development of gold-mining properties in the United States. Mining papers teem with rich strikes, and gold miners are on the move as never before. A lode in Colorado, described as the richest lode ever found in any country, has been opened, and "millions of tons that will assay \$40,000 to the ton are in sight." Production is expanding rapidly, even with the primitive aids available for surface mining. Foreign gold fields are being worked with remarkable results. The outcome of these rich strikes may yet result in a simplification of the coinage question. In 1884 the world's gold production was \$101,700,000; last year \$200,000,000, or nearly double. To say that a \$300,000,000 limit will soon be reached is hardly an exaggeration in the light of all the facts.

Alaska's gold output this year, it is estimated, will be \$3,000,000, nearly \$800,000 of which has been obtained from placer mining, chiefly along the Yukon River. There are about 500 stamps in operation.

Utah people are interested in some reputed enormously rich placers recently discovered near American Falls, Idaho. One nugget has been washed out weighing 13 ounces, valued at \$250, and some of the gravel is said to yield \$5 to \$10 per yard.

The Anaconda (Mont.) *Standard* says that between 1,500 and 2,000 more men are employed in and around Butte, Mont., than ever before, even when the silver mines were running. The mines of that district pay out \$540,000 per month for wages.

Governor L. C. Hughes, Phoenix, Ariz., declares that his State will produce \$10,000,000 in gold this year. He takes an active interest in the progress of Arizona.

A company has been formed at Yorktown, Ga., to develop gold mines by a new process. Buildings are now being erected, and \$50,000 worth of machinery has been ordered.

SENATOR LODGE, of Massachusetts, has introduced a bill in the Senate which is intended to stimulate inventors to greater energy in solving the aerial navigation problem. The bill provides that \$100,000 shall be paid to any person, from whatever part of the world, who shall at any time prior to January 1, 1901, construct an apparatus that will, on the verified report of three members appointed by the Secretary of War, demonstrate, within or near the City of Washington, U. S. A., the practicability of safely navigating the air, at a speed not less than thirty miles an hour, and capable of carrying passengers and freight, weighing a total of at least 400 pounds.

American Goods Preferred in England—Some Reasons Why Trade Is Increasing.

[From Our Special London Correspondent.]

LONDON, January 1, 1896.

IF British manufacturers welcomed the reduction of the United States tariff laws, so as to be able to send thither more woollens and worsted goods, in which Bradford has a practical monopoly of certain kinds, yet the reduction has in no way affected the exports of American-made goods to England or to other countries. Indeed, I believe this year's foreign trade of the United States will excel that of any previous year. Imports of American goods into England are steadily increasing, and they are being sold in active competition with similar articles made here. While the hardware men of Birmingham, the cutlers of Sheffield, the makers of cotton goods in Manchester, the woollen and worsted exporters of Leeds, Bradford and Huddersfield, the tin-plate manufacturers of Wales and the iron masters of England and Scotland have all been groaning at the stagnation of trade in America, and the consequent scarceness of orders from that country, it is at this time that American exporters are quietly walking into our home markets and selling their goods in fine style. I would ask foreign buyers to note the following facts: In 1893 America sold over \$568,000 worth of agricultural implements in England, the very country which makes such goods by the thousand and exports them to her own colonies. Yet American makers walk in and sell over \$568,000 worth in England alone. They also step into the market for books, stationery, maps, etc., and sell us such lines to the extent of some \$593,000. They quietly produce their price-lists in our markets for carriages and horse cars and immediately dispose of such manufactures to the value of \$371,000. (I may here remark that practically all the horse cars running in London of any account are of American make and are much praised for their comfort.) Although we have extensive coal fields, yet we bought coal from America to the extent of over \$250,000 in 1893. Manchester is popularly supposed to be the largest producer of textiles in the world, but yet, with all her skill and long years of experience, we had to buy cotton goods from American mills to the extent of nearly \$1,000,000 in twelve months.

This is not so bad for a country which is only in its youth as an exporter of this class of manufactures. It will not be pleasant news to the hardware firms in Birmingham (Eng.) to learn that we bought American hardware (builders'), saws, tools and similar goods to the value of \$646,000 last year, or considerably more than was sent to any one country. And then, again, our makers of sewing machines are conspicuous by their absence, and we had to buy American machines to the extent of over \$733,000, being in this respect by far the largest and best customer that the United States have got. Equally significant of American mechanical progress and superiority is the fact that England purchased American-made steam engines and other machinery in 1893 to the value of over \$2,028,000, being only surpassed by Cuba. Surely these last few items demonstrate what I have been repeatedly stating in this column, that American hardware, machinery and implements are superior to those made in England. How else can we account for these large and important sales? There is no getting away from this fact: That if people didn't like American goods they wouldn't order them. And when we find that this export trade of American goods to England is steadily increasing we are forced to the conviction that people are repeating their orders, having found the goods quite satisfactory and according to description. It is simply shilly-shally to say anything else, and if English manufacturers like to hide their heads in the sand, according to the manner of ostriches, to shut out the unpleasant truth, well more fools they, that is all I can say.

If I were so inclined I could make some rather unpleasant statements respecting the copying and deliberate imitation of American manufactures in this country. I was at a big exposition of cycles in London last fall and I interviewed a firm making cycle tools and accessories. I noticed that they had some machine tools curiously like those made by certain American houses, and I asked the exhibitors referred to what method they adopted in manufacturing these tools, as the tools were undoubtedly based on American principles. "Oh," they said, "we are not particular. We have no prejudice. If we come across a good American tool we simply make ours on the same lines and copy it outright. We don't fool around these things." Now, one can't help admiring these people in a certain way. There is no humbug about them. They are good old-time pirates, and they tell you straight out what they mean. There is no imitation of the principle of a machine, viz., the design on which it is made, and a tinkering about altering a few wheels so as to make raw hands think it a different type of thing while retaining the spirit of the design.

These people, and others like them, don't take that trouble. They capture a machine, design and all. It is only the novices at the game who try and cover their piracies with a trivial difference in the wheel arrangements, etc. There is one very good reason why the copyists who know their business should not alter the design at all. One reason is that these folks always get hold of the best and brainiest of American designs in machinery. They don't trouble about the small fry. Having got a first-rate design they know they will only spoil it if they set to and alter it even in a small detail, and so the copy comes out of the pirate factory as near a facsimile as possible. But these good folks reckon without their host when they think their copy is going to equal the original. They can't get the original patterns and molds, which all machinists know to be a very important factor in such a matter. And then, too, the copyists can't manufacture on the American system of minute sub-division of labor because their factory arrangements and general system won't allow of it. They also want the American plant by which alone their world-famed exactness has been attained. So we see how very futile it is for these copyists and pirates to think

of doing a big trade in selling false American goods. It can only be a mere temporary and transitory success.

There is one thing, however, that I do regret, and that is that innocent people ordering these pseudo-American goods are likely to be disgusted with the real American machines. When they are sold as American machines the buyer, when he awakens to his mistake, will feel that he has been swindled and will probably entertain a lurking suspicion and resentment against bona-fide American manufactures; while if they are sold as German, English or other make he will entertain the same suspicion against any goods appearing to be the same. This is where American trade suffers, and it would be a good thing if American manufacturers could combine to form an association which would make common cause against all pirates of American goods wherever they may be found. The authorities at Washington might also aid in bringing pressure to bear on foreign governments to aid in hunting out such discreditable practices. It is to the interest of honest trading that piracy should be stopped, and as America is the greatest inventive country she may reasonably be expected to take the lead in such matters. Foreign buyers may, however, avoid being fleeced by sending their orders through a respectable American commission house; while, if they think proper, they can also send a duplicate of the order to the manufacturer himself. This will absolutely prevent fraud.

American Paper for the World.

FEW industries are advancing with such rapid strides as that of paper-making. American genius has equipped our mills with machines of marvellous power and efficiency, and improvements in this direction are yet in progress. We have, to be sure, a splendid home market, growing and expanding right along, and there is cause for genuine satisfaction in the fact that Americans are the most liberal consumers of paper in the world, and that, too, of good stock, yet, with all our wonderful powers of consumption, it will become more and more difficult for the home market to absorb the entire paper product of the country. A market for the surplus must be found as a condition necessary for a steady business. There are a great many non-papermaking countries which are comparatively new, and where the manufacturing spirit is only just beginning to develop. These afford a proper outlet for our surplus, their powers of absorption expanding with our own increasing productiveness, so that there need be no fear of a diminishing demand. It seems to us that it will be much more forehanded, so to speak, to expend our energies in developing fresh markets than to devote them all to the far more difficult task of getting a foothold in older countries. It is something to be proud of, certainly, to be supplying paper to several London daily papers, because it so completely refutes the idea that high wages mean dear products. Great Britain's paper-making industry is well developed, however, and any footing that we may obtain in her home market has a double satisfaction not far to seek nor difficult to understand, but getting it is slow, and in the end may not produce the results sought—a steady, growing and lasting market for our surplus. We are much more likely to realize such conditions in newer markets located in growing countries, such as Australia, South Africa and the countries south of us. The significance of an English demand for American paper lies in the fact that our high-priced, intelligent labor produces cheaply, and can, quality for quality, hold its own in any market where we may choose to act persistently and energetically.

England is worried very much over the incursion of foreign paper, and is lying awake nights trying to think of some way of stopping it. The Merchandise Marks act, which has been in operation for several years, it is claimed has done Great Britain's industries no good and has done her commerce much harm. That act is not effective in the matter of paper, as obviously the mark is placed upon the package, and not upon the paper itself. Now some of the mill workers, and some political reformers as well, are calling for such an amendment to that act as will compel the makers of all paper in foreign countries which is intended for the British market, to watermark each sheet—or, in the case of rolled paper, each length which will constitute a sheet when it comes into the hands of the ultimate consumers—with the place of origin. But even the journals devoted to the paper industry oppose this suggestion, and point out that, if it is carried out, it will surely do the paper industry in England much harm. Of course it would stop the sale of American news in London for the time being, but ultimately it would so advertise foreign papers of all grades, American as well as Continental, that the American paper industry would be the gainer. It is hardly possible that England will intensify the blunder of the Merchandise Marks act. What is to be the largest paper mill in the world will soon be erected at Sault Ste. Marie, Wis., U. S. A. It will be built by the Sault Ste. Marie Pulp and Paper Company, of which F. H. Clerque is president and Drexel, Morgan & Co. are the backers, and the Cramps, Philadelphia's shipbuilders, are the principal stockholders. Orders placed for the mill's machinery show that it will have nearly double the capacity of any other paper mill in the world.

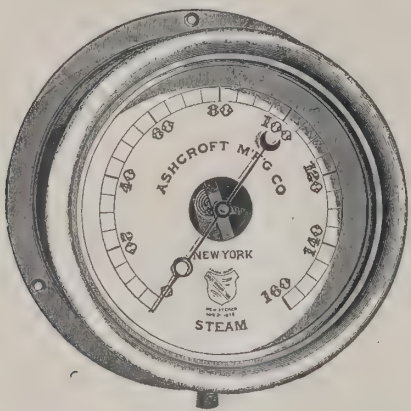
THE *Furniture Trade Review* publishes the exports of furniture from the port of New York for five weeks, showing a total of \$93,000. As before any considerable export of a domestic fabric can be established the main demand of the home market must usually be supplied, the above statistics show that our manufacturers of furniture are doing a prosperous business and are in a very hopeful and promising condition. Our exports of furniture can now be immensely extended and a large foreign trade in it can be built up. And this may now be said of many other American manufactured products.

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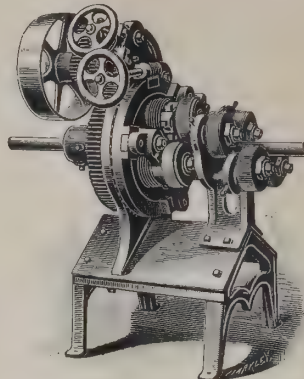
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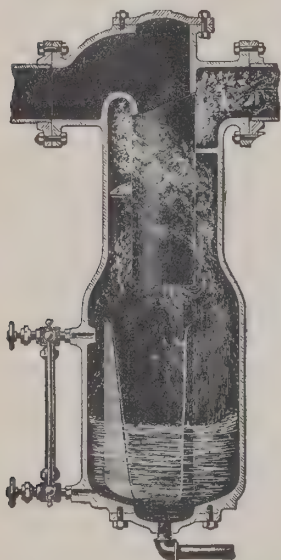
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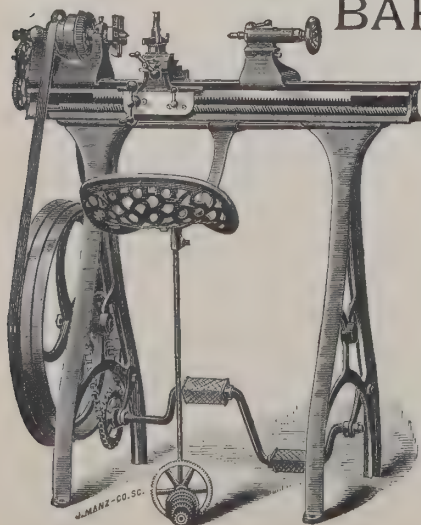
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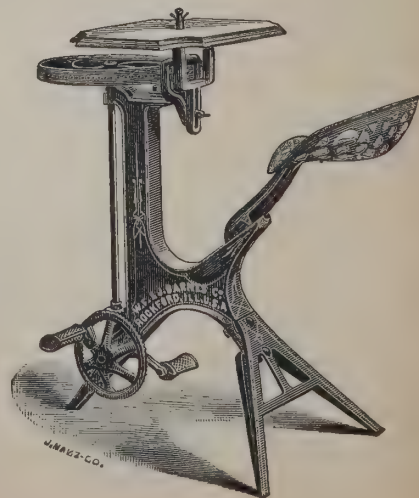
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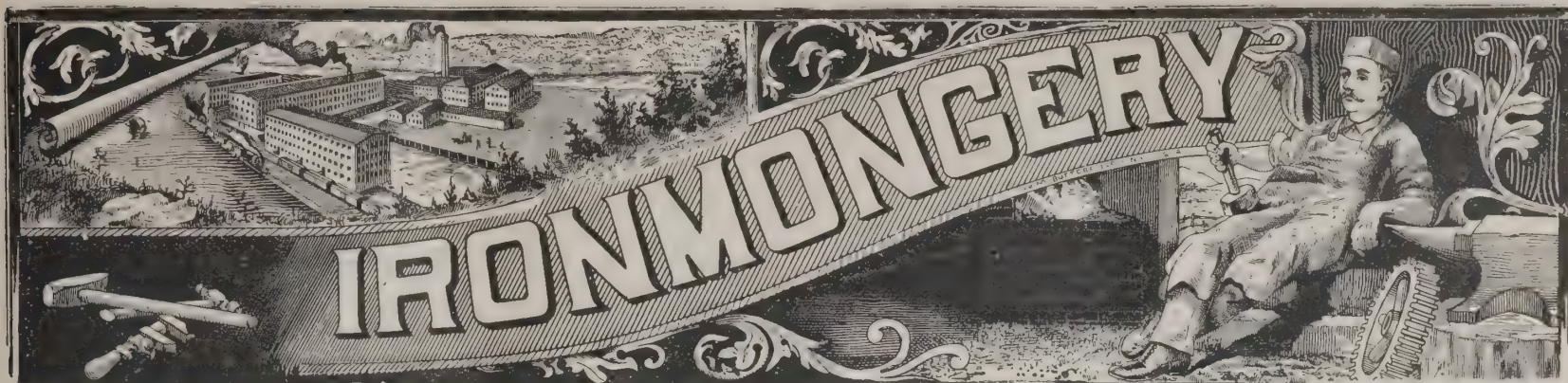
W. F. & JOHN BARNES CO.,

SOLE MANUFACTURERS,

791 RUBY STREET,

ROCKFORD, Illinois, U. S. A.





DEVOTED TO THE FOREIGN TRADE IN MACHINERY AND HARDWARE.

Machinery as an Educator.

AN impression prevails in the minds of many intelligent people, more especially, perhaps, among those who are not directly engaged in mechanical pursuits, that the tendency of modern methods of manufacture in the substitution of machinery for hand labor is detrimental to the intellectual development of the wage earner, in that it makes him an automaton, like the machine which he tends; that the workman in a great factory loses his individuality; that the handicraftsman of a former generation has disappeared, and that his successor is a mere marionette, to whom the gift of brains is a superfluity.

I am satisfied that an insensate machine, in the material combinations of which, however, the skilled designer "has embodied his own mental faculties, so that it is constrained to do his will when power is applied," performing accurately the most complex operations, exerts a stimulating educational influence upon the care-tender, even though he may be an illiterate man or boy entirely unconscious of this influence. If you give a boy of average capacity the simplest routine work to do in connection with a machine—it may be merely to feed it with raw material—he will, at first perhaps, perform his task in a perfunctory manner, taking little interest in the work and having no comprehension of the mechanism of the machine. Little by little, however, the constant repetition of mechanical movements, producing always one uniform result, impresses itself upon his latent powers of observation and comprehension, the underlying principles and heretofore hidden motive of the seemingly inexplicable combination of wheels and gears is revealed, and simple order is evolved out of complexity; a new interest is developed and the boy becomes an intelligent operator. * * *

The educational influence of mechanical occupation upon the workingman is strikingly illustrated in another manner. You will find in all large industrial establishments employees who exhibit as much skill in their work as that of well-known original scientific investigators; they are daily performing operations as delicate in their way as the work of the microscopist, and with a degree of accuracy amazing to the novice. Take, for example, the simplest operation of calipering a tube or measuring a rod, and you will find mechanics dealing quantitatively with minute fractions of an inch which ordinarily people totally disregard. * * *

I believe that every novel machine possesses something of the personality of its creator. I believe, furthermore, that it is possible to trace through the machine, back to the inventor, a positive and continuing influence of his mind upon the mind of the operator.

I believe that the special mental development of the present generation of American engineers and mechanics may also be traced through historical relics to the subtle quality of mind with which famous American inventors have endowed their creations. These forces have been silently working to mold the minds of men in characteristic grooves, so that it is impossible to mistake a purely American machine for a foreign production, as it is to mistake a Chinaman for an Indian. This characterization may be even more sharply defined. It is not an unusual observation among mechanical experts to-day that machines produced by one establishment may often be distinguished from similar machines of another make (without the name plate) through a peculiar "something which the Frenchman expresses with a shrug and 'Je ne sais quoi.'"—A. E. Outerbridge in *Engineering Magazine*. *

Electric Railroads for Pleasure Traffic.

THE number of roads built mainly or exclusively to cater to pleasure seekers and tourists is growing, and this fact is indicative that the operation of such enterprises is profitable. This tendency is shown to a marked extent in Switzerland, where the number of mountain and similar railways built for the use of pleasure seeker only is far greater than 10 years ago. The persons for whom such enterprises are conducted are liberal in their patronage, provided a fine view or other attraction rewards their trouble and expenditure, so that this field promises to be a fruitful one in development during the next decade or two. An example of the expense to which builders of such enterprises have gone is given in the electric railway through the narrow gorge or cañon of the Niagara River below the Falls. The engineering difficulties in the way of building this road, which is unique in electric railway construction, impress the observer with the amount of capital being invested in railways designed mainly for pleasure traffic.

English and American Lathes.

A COMMERCIAL war has long been waging between the United States and England, in which the older country has been worsted. England has found the American victories of peace to be in some respects more disastrous than those of war. While the American navy of 1812 was too small to threaten seriously the naval supremacy of Great Britain, American commerce of to day is threatening her commercial supremacy all over the globe. This commercial war has been carried into Africa, and American goods are even supplanting British in the British markets. American woollens, tools, hardware, and leather goods, not to speak of other articles, are sold in England's commercial centres, and the London trade journals, while they try to minimize the facts, openly acknowledge and deplore the inroads of American manufactures on domestic products.

In spite of the difference in the wages of workmen, the English manufacturer cannot compete with his American rival. Yankee ingenuity enables American workmen to make superior goods at a less cost than the same goods can be produced in England. Unable to withstand this competition, the English commercial papers resort to calumny and abuse, and try to prove that the American manufactures are really inferior to the English. The hostility which has long been displayed in their columns is not far removed from that found in newspapers whose countries are actually at war. Expressions are used such as Napoleon made a cause of complaint against the English Government of that day in the brief interval of peace which interrupted the long contest between France and England in the early part of the century. If any justification were needed for the hostility now shown toward England in this country, it could be found in the columns of the English trade journals. They have attacked our commercial honor and impugned the good name of our manufacturers. We have wrongs of our own to avenge against England, even if it were not necessary to set bounds to her encroachments on a sister republic.

Our taking up the cause of Venezuela will prove a great blow to England, even if the matter is settled amicably. Already South America is buying largely of American goods in preference to the English. The South American republics, on seeing our disposition to champion the cause of one of their number against European aggression, will turn their preference of American goods to prohibition of the English, and the capture of the entire South American trade, which has already to a large extent been won for us by the victories of peace, will result from our willingness to take up arms in the defense of the weak. There is thus a commercial gain likely to result from the vigorous adoption of the Monroe doctrine, which will more than offset the disastrous results due to faint-hearted financiers becoming panic-stricken without cause, and which will be lasting while the other is temporary.

The commercial struggle with England has received an impetus from a threat of real war, which will do more to foster American foreign trade than anything which has happened since England did so much to destroy it by equipping and manning Confederate cruisers.—*An American Manufacturer in New York Sun*.

American Trolley Roads in England.

JOHN BULL has at length come to the realization that there are such things as electric roads in the world, and that possibly they may be a good thing. An American syndicate has secured the franchise for an electric road in the city of Coventry, which has about 60,000 population, and the work is going ahead.

The Coventry road has eight miles of track, which is all single track, but with long sidings. The estimated cost of rolling stock, poles, wires and power station is \$250,000. Everything is to be furnished from America, even to the poles for the wires. It was originally supposed that English poles would do, but when put up they were found unequal to the strain of supporting the wires, and the necessary poles had to be ordered from Philadelphia.

If the innovation takes with the English public there will be a pot of money for the American syndicate, which will probably be called upon to put in similar roads in nearly all the English cities. The conservatism of the English people on this subject seems to be as pronounced to day as it was in the time when George Francis Train put down his first tramway in Parliament street, London, and was then compelled to take up his rails by the outraged and indignant public.

Large Increase in Exports of American Manufactures.

THE official returns giving the exports of our manufactured products are brought down to October 31st last. They show conclusively that for the 10 months ending with that date American manufactured exports exceeded in value by \$15,000,000 the exports of any like period in our entire history. The table furnished by the Chief of the Bureau of Statistics is as follows:

EXPORTS OF MANUFACTURES.

For 10 months, ending October—

1891	\$141,076,982
1892	125,144,368
1893	146,556,413
1894	148,739,702
1895	164,572,481

Who can read the above figures without seeing that at the close of 1894 our mills and workshops took a new and larger lease of prosperity than they ever before enjoyed? Never before has so cheering a day dawned upon American labor and capital. For any industry must prosper when it is able to sell a considerable amount of its products abroad.

All our records of advance are broken by the aggregate export of American home made fabrics in 1895.

The principal increases in exports of American manufactured goods during the 10 months ending October last were in silk fabrics, machinery, glass and glassware, leather and manufactures of leather, agricultural implements, chemicals and drugs and iron and steel manufactures. The comparative figures for the last named—the basic and most important—are as follows:

EXPORTS OF IRON AND STEEL.

For 10 months, ending with October—

1891	\$25,202,435
1892	22,541,759
1893	25,084,638
1894	24,496,683
1895	28,149,945

These official data prove that in the year 1895, despite the accumulated demand at home for the products of our iron and steel furnaces, their output has sufficed to supply an export amounting to nearly \$3,000,000 in excess of any previous export.

The increase in the exports of machinery last year is also noticeable, as will appear from the following table:

EXPORTS OF MACHINERY.

For 10 months, ending October—

1891	\$8,273,697
1892	8,334,347
1893	8,800,950
1894	8,571,301
1895	9,671,945

The statistics of our glass and glassware shipped to foreign countries are also gratifying.

EXPORTS OF GLASS AND GLASSWARE.

For 10 months, ending October—

1891	\$764,039
1892	757,481
1893	824,988
1894	736,992
1895	829,655

The exports of American chinaware also increased last year and reached the highest figures recorded in the statistical tables. The following figures explain themselves:

EXPORTS OF LEATHER AND MANUFACTURES.

For 10 months, ending October—

1891	\$11,308,932
1892	9,450,942
1893	11,129,250
1894	12,423,216
1895	15,613,403

Noteworthy also is the improvement which has been recorded since 1894 in the export of American chemicals, drugs and dyes, as shown by the following returns:

EXPORTS OF CHEMICALS, DRUGS, DYES, ETC.

For 10 months, ending October—

1891	\$5,164,906
1892	5,296,761
1893	5,732,920
1894	6,309,012
1895	7,012,761

During 1895 the exports of flax, hemp and jute manufactures increased over those of 1894 from \$1,451,653 to \$1,541,962. The export record of '94 also was broken in 1895 by our manufactures of wood and India rubber, by clocks and watches, manufactures of tobacco, carriages and cars and agricultural implements.

If the rate of export prevailing last October continued to the end of 1895 the total is \$200,000,000. This will be several millions of dollars in excess of the largest total of such exports ever recorded in any year of our commercial history.

THE STANLEY WORKS, New Britain, Conn., and 79 Chambers street, New York, are introducing to the hardware trade an improved wrought steel storm window fastener, by the aid of which storm windows can be adjusted in a minute and are held in place securely.

Gas Locomotives and Electricity.

IT has been generally known to the mechanical world for a considerable time that the gas engine, and especially in connection with what is known as producer gas, gives promise of revolutionizing the power supply of the world. It is stated that to-day gas engines are in operation whose consumption of gas represents less than one pound of coal per horse-power hour, while we know that the best steam engines in existence consume, say, a pound and a half, those in very general use three or four pounds, the best locomotives seven or eight pounds, while twelve pounds and upwards are not infrequent rates of consumption. Gas engines have not as yet been developed to as large sizes as are desirable for extensive power plants, and the regulation of the speed of the engines under suddenly varying loads is as yet very far from what is required; still in these respects progress is being made daily. Engines up to 500 horse-power are in operation, and more than one electric plant is already driven entirely by gas engines, so that the complete adaptation of the gas engine to all the various service for which the stationary steam engine has been used is practically assured. It is understood that Mr. George Westinghouse has of late been giving his attention to the gas engine, and that he has materially helped to advance it toward perfection. It is reported also that Mr. Westinghouse has been giving the directors of the Pennsylvania Railroad a lesson in power economy, telling them that they are wasting in their now antiquated steam locomotives at least 4,000,000 tons of coal per annum, or that the substitution of electricity, obtained through producer gas and the gas engine, would save them \$5,000,000 per year, a sum that would amply and quickly justify the large expenditure that would be involved in the change of machinery.

The mechanical idea to-day is the direct evolution of the electrical current from the coal pile without the intervention of the power-driven generator. It may be that we are approaching this, but producer gas and the gas engine give no hint of it. Their attack is directed at the steam engine alone. Power is cheapened, and the results obtained through electricity as a power transmitter are cheapened with it. In this transition time it may not be safely said whether the ultimate result will be the advancement of electricity and the extension of its employment as a power transmitter or not. When we have said that the gas engine gives a higher fuel economy than the steam engine we have not said it all. With the gas engine the high economy is found in the smallest engine as well as in the largest, while the small steam engine is notoriously wasteful. The first cost of the engine and boiler of small power is high and their maintenance and operation are costly and troublesome, and the electric motor has offered in comparison undoubted advantages of economy and convenience, which the people have been rather slow to avail themselves of. But if gas engines are substituted for steam engines and boilers, at one-third or one-quarter the cost of apparatus, with less than one-quarter the fuel cost, and not requiring one-tenth the attention, the electric motor will find the task of knocking them out a far different one from that of superseding the small steam engines. The horseless carriage is the sensation of the hour, and no one can doubt its complete dominion in the near future. The gas, the gasoline and the oil engine, are, as we know, practically identical; in the form of the gas engine, why may it not put the trolley car upon the defensive and before long drive it out of existence? The gas engine on the street car must of necessity mean cheaper power than the gas engine at the power house, with all the apparatus of electrical generation and transmission between, and the carrying of a sufficient supply of gas on the car for any length of trip may be provided for without the slightest inconvenience.

It is worth while for the railroads to inquire whether producer gas, which promises them such a saving when working for them indirectly through electricity, may not be able to render them a cheaper and more convenient service by being employed directly. It is difficult to think of a locomotive without boiler or tender; but in place of boiler and tender an enormous storage tank of gas and a suitable gas engine would not comprise a more incongruous monster than the electric locomotive.

The gas locomotive is apparently as easily within the bounds of practical possibility as is the electric locomotive, and would have some important advantages over the latter. It may easily happen that electrical men who think they are merely showing how the electric motor can the more easily overcome the steam locomotive are in reality starting a movement that will end in shelving both of them.—*American Machinist*.

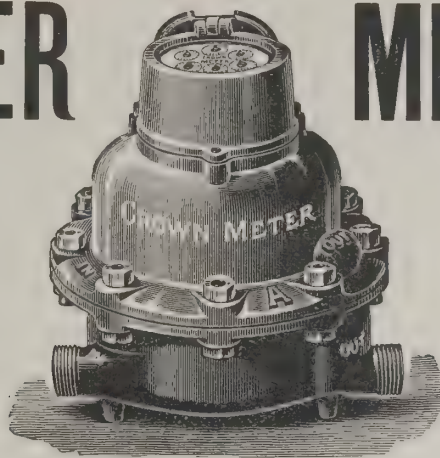
The Largest Electric Light and Power Company.

THE capacity of central stations in Paris of the five lighting companies is estimated at present to be 454,560 incandescent lamps of ten-candle power, equivalent to about 300,000 sixteen-candle power. This and the motor load of 331 kilowatt (441 horse-power) give a total of 19,100 kilowatts. This is about two-thirds of the capacity of one company in New York City, viz., the New York Edison Company. This electric company, the largest in the world, has 50,000 less lamps installed, but makes up for this by the large motor load of over 11,000 horse-power. This motor load is phenomenal, and one that may well excite the envy of electric lighting companies the world over, as it is a most desirable thing for a good paying day load when the majority of the lights are not in use and surplus power is available. This large motor load also attests another fact, and that is the rapid and widespread favor the electric motor is receiving, and its general use. It is stated that the motor load of the New York Edison Company has increased 3,648 horse-power in ten months, which shows clearly that the public appreciate the electric motor, and generally demand it.

CROWN, NASH, : GEM : AND : EMPIRE WATER METERS.

155,000

In Actual Service at the Present Time.



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In Actual Service at the Present Time.

YEARS OF EXHAUSTIVE SERVICE IN ALL SECTIONS OF THE GLOBE HAVE DEMONSTRATED THE
ACKNOWLEDGED SUPERIORITY OF OUR METERS.

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UNBREAKABLE STEEL

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SEND FOR ILLUSTRATED
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ALWAYS STATE WORK TO
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Plans furnished to erect by experts of long practical experience, furnished to erect and run our machinery at reasonable wages.

OUR SAWMILLS ARE RUNNING IN NEARLY EVERY COUNTRY.
You run no risk ordering direct or specifying our machinery.

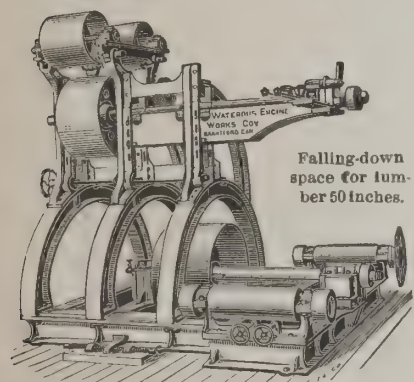


Fig. 33.—No. 4 Saw Frame.

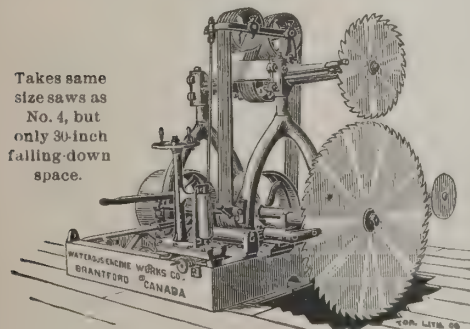
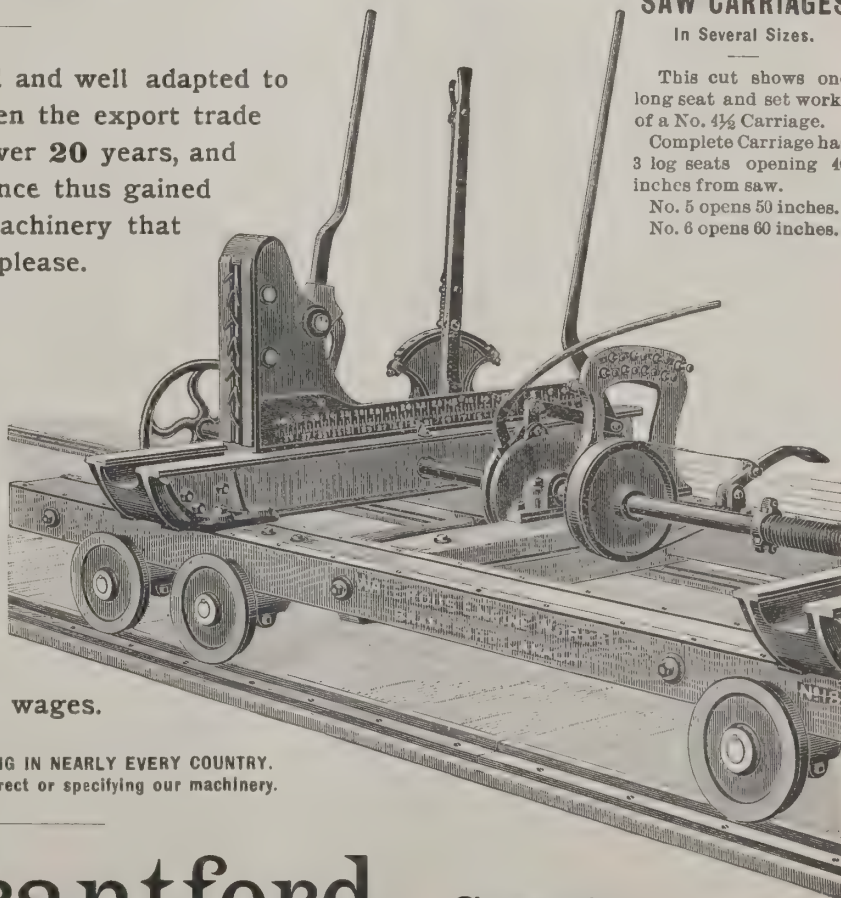
Takes up to 72 inch lower and 40 inch upper
space for lumber 50 inches.

Fig. 32.—No. 3 Saw Frame.



This cut shows one long seat and set works of a No. 4½ Carriage. Complete Carriage has 3 log seats opening 40 inches from saw. No. 5 opens 50 inches. No. 6 opens 60 inches.

WATEROUS, Brantford, Canada.

English Trade Deceptions.

The ethics of commerce require honesty in the quality of commodities sold, as well as handling the proceeds of sales. Trade deceptions rob the buyer as effectually, if not as directly, as the thief who may take cash out of his pocket. Here are a few illustrations:

Great inducements have been made to New York cheesemakers to make inferior goods for British trade, but the quality has been steadily maintained at the high standard established fifty years ago.

Every American manufacturer who seeks trade in Great Britain is asked to adulterate or cheapen his goods for that market. A few months ago a local confectioner who has built up a large trade in London was asked by a customer in that city to use a Belgian earth, which is very heavy and smooth, in chocolate and mixed French cream goods; the use of this compound would have reduced the price 10 per cent. The American refused to use the adulterant and lost the customer, who placed the order in France. The adulterated goods were shipped to London in bulk, to be packed in boxes marked with labels which are counterfeits of the New York maker's celebrated brands. So far back as 1865 William P. Haines, superintendent of the Pepperell Mills, Biddeford, Me., was offered in the dull season by a Manchester, England, firm an order for \$1,000,000 worth of cloth for the Chinese market, made flimsy, but loaded with lime to deceive the consumers. Mr. Haines said: "We make honest American goods, and we won't cut the quality. We guess the Chinese are smart enough to see that good cloth is better for garments than mosquito netting loaded with clay and lime, and when they find out that we will sell them direct they won't go to England for inferior goods." The Manchester man did not leave an order with the Pepperell Mills, but the shrewd managers thereof sent samples of honest goods to China, and in a short time built up an enormous trade, which keeps several large mills running all the year round. Two years ago an American maker of kerosene lamps was asked to make some cheap and badly made lamps for the English market by a London dealer, who said Yankee lamps were too good for European markets. He learned that the American had decided to open stores in London and Paris, managed by "Yankee drummers." The Englishman declared that European buyers would not buy the patterns nor pay the prices. Events have proved that European buyers want our lamps, and will pay better prices than rule here, for nine American lamp factories have wholesale and retail stores in London, Birmingham, Sheffield, Paris and Marseilles. In Japan, the Yankees of the East won't use any lamp for kerosene which is not of an American pattern.

American goods are the best in the world for the reason that the standard of commercial honesty, inventive ability, and mechanical construction is higher here than elsewhere in the world.—*G. Wilfred Pearce, in New York Sun.*

Progress of Labor-Saving Machinery.

SOME one has estimated one machine, with one man as attendant, manufactures as many horseshoes in one day as it would take 500 men to make in the same time.

Out of 500 men employed at the log-sawing business, 499 have lost their jobs through the introduction of modern machinery.

One nail machine has taken the place of about 1,000 men.

In the manufacture of paper 95 per cent. of hand labor has been replaced.

One man now makes as much pottery ware in the same time as 1,000 could do before machinery was applied.

By the use of machinery in loading and unloading ships one man can perform the labor of 2,000 men.

Steel ties machines are a saving of 500 per cent.

Steel wire nail machines are a saving of 200 per cent.

Electric Motors for Steam Railroads.

THE New York, New Haven and Hartford Railroad will not allow the Pennsylvania Railroad to get the credit of being the first to use electricity to haul trains long distances. A party of officials headed, by President Charles P. Clarke, have examined the East Pittsburgh works of the Westinghouse Electric Company. There they were shown the new polyphase long-distance current system in operation.

They also made a minute examination of the mechanism of the larger motor engines, which the Westinghouse Company and Baldwin Locomotive Works of Philadelphia are jointly experimenting upon, and which are designed for longer distance and heavier hauling than the motor engines now in use.

They said they are anxiously waiting the progress of the experiments with a view of taking the earliest advantage of successful results.

THE Duryea Wagon, which stood first in the Chicago race, is in every detail of design and construction, American. By accepting the statement of what was regarded as the authority on horseless vehicles in Chicago, it was made to appear that the Duryea motor was of foreign construction. It was made, every part of it, in Springfield, Mass.; patents covering it. The steering gear and speed device are of Duryea invention, also. In fact, it is distinctly an American motor and an American vehicle. It is to be regretted that in the excitement of the race preparations, a contrary and untrue statement was permitted to go uncontradicted and then copied in our trade papers, in the belief that the statement was correct.

Railroad in China.

SEVENTEEN years ago there were but 10 miles of iron tramway in the whole Chinese Empire, and this tramway ran from the Karping coal mines (a distance of 80 miles from Tien Tsing) to the sea. The motive power on this line was coolies, who loaded the cars with coal, pushed them down to the sea, unloaded them, and pushed them back again. The length of a day's work was at that time 12 to 14 hours, and the wages 10 cents (Mexican) per day.

About that time the works were put in charge of a young English engineer who was restless, enthusiastic and modern; who was totally unacquainted with Chinese lethargy or the conservatism of their institutions. He proposed many changes in order to facilitate the work and decrease the expenses, but owing to Chinese prejudice the authorities at Peking promptly vetoed his attempts at progressive measures.

In spite of these measures he had made up his mind that he would have a locomotive. To have it was to build it himself. Consequently, the workshop in which the first locomotive in China was built was a mat shed. The tools at his command were few; four small driving wheels were ordered from the United States; an old stationary engine furnished the boiler, and a broken-down winding engine the cylinders. The result was that the "Rocket," as this engine was named, was an object curious to behold to the Chinese as it flew over the track, its sides emblazoned with large yellow dragons.

In due course of time the Peking Government heard of the innovation, and consternation reigned at the Weather Bureau, as it was thought that it would cause displeasure to the spirits of the air, and as a result it was summarily ordered to be suppressed. It was then used for short trips in the yards, and gradually the length of its travels was extended, until at last an Imperial decree was granted for its free use. This young Englishman is to day the chief engineer and general manager of the Chinese railroads; his name is C. W. Kinder, familiar to all railroad men in America.

The rails used to-day in China are 60-pound steel, Sandberg pattern, and are made at Barrow, England, and are delivered at Takee for less than \$21 per ton.

The main shops are at Tang-Shan, and consist of shops for the repair of cars and locomotives, and for the construction of rolling stock. They build all their cars, both passenger and freight; also tenders for locomotives. The locomotives themselves are of English and Scotch make, with the exception of one, which was built by the Grant Locomotive Company.

The engines are of the Mogul type, and are fitted with powerful steam brakes on the drivers. They have tried to use American cast-iron wheels, but the results were not as satisfactory as those secured from the use of the European steel-tire wheel.

Every car has a brake at each end, worked by a screw, and as yet no continuous brakes have been used, although two trains were once fitted with the Westinghouse system, but, owing to some trouble in manipulation, the directors failed to adopt the system.

There is one detail in the rolling stock that is American—all cars have the Janey couplers, and it is a source of regret to the manager that he cannot manufacture these, but has to pay the American price for them.—*A. F. Tennille in American Machinist.*

A German Acknowledgment—Electrical Superiority.

HANS ZOPKE, a German civil engineer commissioned by his Government to look into the methods adopted in the United States for the propulsion of cars by electricity, says: "I think America is far ahead of any other country in the use of electricity. You have taken advantage of every invention and appliance that the minds of electricians have conceived, and in this are the leaders of the world. I have made many reports to my Government regarding the electric roads of the United States, and now, as my leave is nearly up, I am furnishing the final recommendations and observations. I have been much interested in the experiments with electric locomotives, and the one used in Baltimore is one of the marvels of the age. It is a great credit to the General Electric Company, and, I believe, is but the forerunner of greater things in the same line. I have applied for an extension of my leave in order that I may remain in the United States to see the developments of the next six months. I believe that the spring of 1896 will witness some of the greatest experiments with electricity the world has known. The principal trial will be in the use of electric motors on steam roads, and I feel sure that the results will be surprising. My Government is much interested in the future of electricity, and is anxious to take advantage of all modern methods and appliances."

Breaking a Record in Iron Production.

PREDICTIONS that the production of pig iron in the United States during 1895 would surpass all previous records appear to be borne out by the facts. The *American Manufacturer* has compiled a statement of the year's output, which shows that the total production reached 9,387,639 tons. These figures not only exceed those for 1894 by 730,251 tons, but are also considerably heavier than those for the year 1890, during which period the output amounted to 9,202,703 tons, the highest point previously attained in the history of the country. The figures of Great Britain's production of pig iron have not been published, but unless the output in that country shall greatly exceed that of any previous year, the tonnage of the United States will far surpass it. The heaviest year's British production was 3,589,680 tons in 1882, while last year the output amounted to only 7,364,745 tons.

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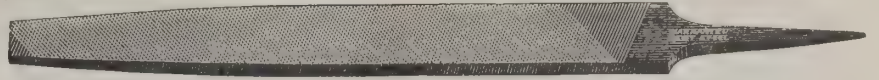
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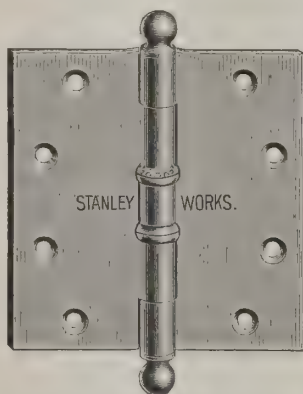


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SAMSON BRAND.

Stanley's Ball-Bearing Steel Butts

BEST BUTTS
IN THE
WORLD
FOR
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SEND FOR PRICE LIST.

ADVANTAGES:
UNLIMITED RESISTANCE TO WEAR.
NOISELESS IN OPERATION
NO NECESSITY FOR OILING.
LOW PRICE.

THE STANLEY WORKS, NEW BRITAIN, CONN., U. S. A.
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Sounds the Alarm promptly
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ALWAYS SET.

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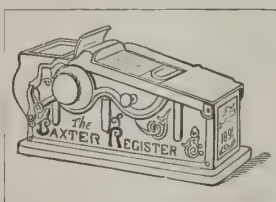
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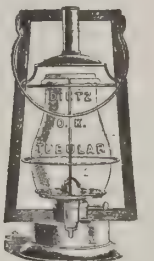
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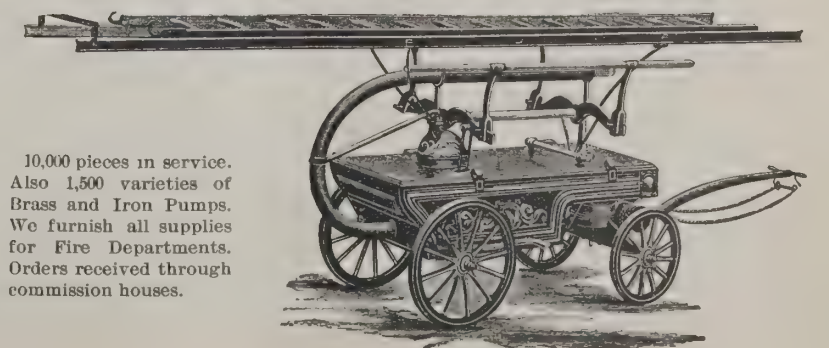
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Advantages of Electrical Mining.

A QUESTION which is now occupying much attention is the use of electricity in mines. The many benefits derived by its use as a power are well worth the careful consideration of all who are interested in mining operations. Its advancement into our mining centres is daily becoming more rapid as its successful results become known, and when one thinks of the numerous departments it can be used in with such great economy, they find few mines where it could not be worked to some advantage. From the many difficulties surrounding some new properties which are to be developed, it would seem that electricity is an energy in every way naturally adapted for this class of work, as in places where the country is of a rugged nature—it being impracticable to locate the mill near the mine on account of the water power not being convenient that it may be used in the usual way—in this case by the use of electricity the mill could be placed at the mine and run with a motor which would receive its power from the wires extending down the mountain side to the dynamo and water wheel situated on the stream in the canyon, which would save the expense of operating long tramways, especially in countries where the winter climate is severe. In some mills where one large wheel or motor had been used to furnish power for the entire mill it has been found very satisfactory to divide the power among a number of small motors, each being separately belted to the cam shaft. This has been found very convenient in times when there was a shortage of water, or in making repairs—as any set of batteries may be shut down leaving the others running and at all times saving the friction load of the heavy line shaft—when motors are used for underground work, such as hoisting or pumping, they are found to be a very desirable power, working with very little noise and easily handled; there is also the absence of smoke and escaping steam, which is very favorably noticed. I know of a plant that was sold a short time ago to be installed upon a very good gold property. This plant has saved a monthly fuel bill of \$800. Since then the company have lighted their mines from the same dynamos without any extra expense (save wiring the mines). They have an abundance of power and another saving was made of \$100 per month candle bill. The value of electricity in working low-grade ore is too well known to require much to be said in its favor, as mines situated some distance from water power, and at such an altitude to make it very expensive to deliver fuel, have found the electric motor the only power by which they could operate. When water power is not available, a steam plant located at a point where fuel can be had at a reasonable figure, and being some distance from the mill or mine, insures perfect safety from fire while the same benefits of power can be obtained together with lights, which greatly overcomes the danger from the explosion of gases found in many places. Much could be said of the many uses to which it is being applied, as it is the coming motive power, and in the near future will be almost an indispensable factor in mining.—*Black Diamond*.

Motive Power for Street Railroads—Comparison of Cost.

THE following interesting comparative statistics are taken from the annual report of a company which is now operating about 12 miles of its roadway by the cable system, about five miles by horses and about six miles by electricity, a total of about 23 miles of road (47 miles of track). The road carries between 12,000,000 and 15,000,000 passengers per annum:

	CAR MILEAGE.		
	Cable.	Horse.	Electric.
1890.....	4,606,294	678,953	437,108
1891.....	4,348,713	614,026	416,292
1892.....	4,281,123	550,481	402,077
1893.....	3,156,298	496,044	445,975
1894.....	3,974,336	472,035	571,823

	OPERATING EXPENSES PER CAR MILE.		
	Cable.	Horse.	Electric.
1890.....	\$.095	\$.109	\$.115
1891.....	.085	.112	.109
1892.....	.083	.100	.096
1893.....	.091	.107	.097
1894.....	.080	.112	.092

ELECTRIC railway construction is almost, if not quite, as much the province of the civil engineer as of the electrical or mechanical engineer. While there are many questions to be decided of an electrical and mechanical nature, there are also many problems, and most important ones, which can only be answered by one who is also well versed in civil engineering. *The Street Railway Journal* says: "When we consider the great importance to the life of the rolling stock of having a substantial and well-planned road bed, and to the company of possessing durable foundations for machinery and buildings, we realize the degree to which the skill of the civil engineer is necessary. Not only this, but it often must be of the highest order as the importance of some of the problems, viewed both from a financial standpoint and that of the consequences to human life, equals that in any other branch of engineering. Electrical engineering, it has been said, is nine-tenths mechanical engineering, and in the same way it can be said that electrical railway engineering is not nine-tenths, perhaps, but certainly to a large degree civil engineering. If this part of the work is slightly or poorly done the mistake of the policy will make itself evident."

—Aluminum has been adopted in the construction of racing skates. The use of the metal gives strength with lightness as well as handsome appearance.

Superiority of Electrically Operated Roads.

ON November 25, 1895, the most furious snowstorm in 24 years visited Chicago, and up to noon of the following day practically cut her inhabitants off from the outer world. The wind blew in a gale, bringing with it first snow and then rain, and Chicago was turned into a sea of impassable slush. The temperature dropped below freezing and the moisture collected on the roofs and walls and in the streets became a solid mass of ice, upon which for hours beat hail and sleet. Telephone, telegraph, electric light and trolley wires, weighted as they were with the accumulation of snow and ice which had settled on them, snapped and fell in all directions. The police and fire departments were paralyzed and surface transit was completely stopped. Not a trolley car, cable car or horse car moved except at exceptionally long intervals and with the greatest difficulty. The residents on the outskirts of Chicago could not reach their homes, and the night population of Chicago became for this occasion far beyond the normal.

Those, however, who lived along the lines of the elevated roads found some relief. By dint of hard work those operated by steam were able to get trains through, but not without considerable delay, the roads being blocked by fallen poles and wires erected in the streets through which they run.

The sole exception, in all this time of travel tribulation, was the Metropolitan Elevated Railway, of Chicago, which is operated entirely by electricity. No stoppage of moment occurred on this line and the motor-driven trains ran under a shortened headway, satisfactorily carrying not only the ordinary quota of passengers, but thousands of those who usually depend upon the surface lines to take them home. At the Madison street station the crowd was so great that the station and stairways became jammed with the constant influx of people, upon which for several hours the removal of those carried off by the electric trains hardly made any impressions.

Throughout the entire duration of the storm, service on the Metropolitan Elevated Railway suffered only two short interruptions. The first lasting nine minutes; the road being rendered impassable on account of a fire in a building adjoining the track. The second of five minutes, occasioned by a slight defect in one of the cars.

This severe storm, made up of almost every kind of climatic unpleasantness imaginable, put the electric elevated railway to the severest test that could have been conceived. And yet in spite of the difficulties which put a stop to surface transit, which interrupted for hours the steam suburban traffic and the steam elevated roads, the electric road was hardly affected.

Such a record as this especially emphasizes the superiority of the electrically operated road over roads operated by steam, and serves also as an object lesson which people in other cities might take to heart.—*Electrical Review*.

Standard Sizes for Machine Repairs.

A PROPOSITION has been made recently by bicycle riders to several agents and manufacturers of bicycles that the manufacturers get together in a convention and agree to reduce numerous parts of their different machines to standard proportions.

As it is, the number of bicycle makers increases constantly, while each maker fixes sizes for every part and fitting without regard to what any other maker has done, and finally the unfortunate owner of a bicycle who may have lost or broken some part of his machine, no matter how insignificant, cannot get perfect repairs unless he secures a duplicate part from the factory of the original maker. A generation ago a similar state of affairs existed in the manufacture and use of farm implements, such as mowers, reapers, forks, plows, cultivators and threshing machines. The same was true also regarding wagon hardware and of machine work. If the simplest bolt broke or even a nut was lost there was only one of two things to be done—go to a blacksmith shop and get him to make a more or less imperfect substitute or send to the maker of the machine for a duplicate. The absurdity of this finally brought about conventions of manufacturers, who agreed upon standard sizes for many things, such as threads for nuts and bolts, and to-day any hardware store can supply many of these parts which fit dozens of machines.

The same action is asked from the bicycle manufacturers. The makers have not paid any attention to the matter heretofore, even to the extent of saving in the number of sizes of parts on any single machine. Looking over almost any bicycle in the market a person will find, perhaps, half a dozen sizes of nuts and threads, each requiring a change of wrench to fit it, when one-half of the number would have been just as good. Comparing different makes of machines, a man finds upon each some parts which are to all intents identical, except that, because of a lack of standard, a nut taken from one machine will not fit the same part of another, nor would the part taken from one machine fit in place of the part taken from another.

In some respects the makers have been obliged already to agree upon standard sizes or parts, such as rims and tires. There is no reason why a similar agreement should not be reached regarding the fittings of almost every part, so that any repair shop, supplied with a reasonable quantity of standard repair parts, should be able to put any make of machine in order at short notice.

A DEAL has been closed which will result in the consolidation of the two largest radiator manufacturing concerns in the world, the Standard Radiator Company of Buffalo, and the St. Louis, Mo., Radiator Manufacturing Company. The new concern will be known as the Standard Radiator Company, and will manufacture fully one-half of the total output of radiators in the world.

Puritan Highest Grade Bicycles.

UNEQUALLED AND UNAPPROACHED IN
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Most Popular Wheel for Export.

LIGHT. STRONG. FAST.

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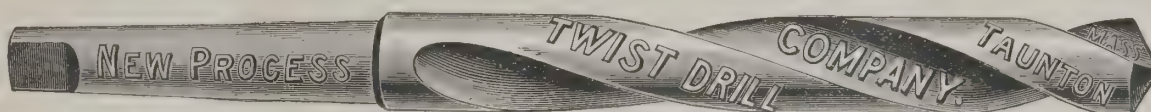
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Bit Stock Drills,
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1/2 inch " "
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Drills, fitting ratchets
Etc.

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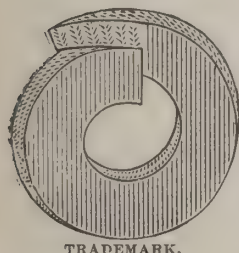
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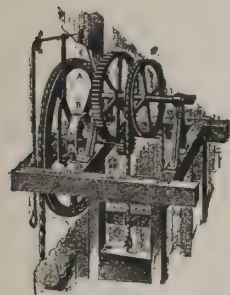
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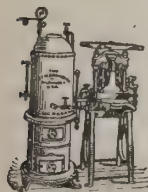
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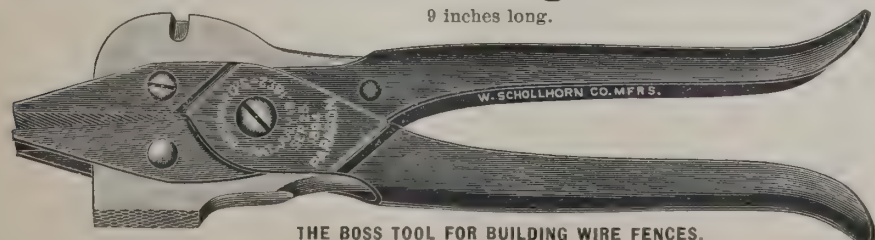
Improved Machinery FOR Rubber Stamps and Cellutypes.

The Cellutype is cheaper and more durable than Electrotpe and equal to a Brass Die.

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Bernard's Patent Paragon Plier, Manufactured by The Wm. Schollhorn Co.,

9 inches long.



THE BOSS TOOL FOR BUILDING WIRE FENCES.

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This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

Manufacturers of the Celebrated "Star Brand" Shears and Scissors, and "Elm City" Shears in large variety.

BEST QUALITY ONLY.

Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

Progress in Electric Power Transmission.

AS week by week we chronicle the inauguration of new power transmission plants, it is not difficult to discern the place which electric power will occupy in the future. Enough has been shown in the brief period of ten years to demonstrate that only in rare and special cases can any other form of power compete with electricity on an even basis. While this is conceded, the question of the best and most economical methods to be employed electrically are still among the matters which will bear discussion. Just at present the three-phase system seems to have the greatest number of advocates for long-distance work armed with able arguments as to copper economy and other valuable attributes of this method, and if the number and size of the plants erected on this system be considered they would certainly appear to have so far the better of the argument. The latest work carried out on this system, that at Portland, Ore., is another striking example of its flexibility. But we must not lose sight of the original polyphase system, the two-phase, which is already doing good work and which has still to be given a crucial test on a large scale at Niagara. When the latter plant has been in full operation for a few years one will be better able to judge of the relative merits as between two and three phases or to apply either one to the cases best suited to it. The transmission of power over long distances by the use of electricity has brought into some prominence the immense resources, in the shape of latent energy, now lying in the accumulated waste around coal fields, and in unmined coal of quality too poor to be mined for transportation. While it would not pay to carry these accumulations to industrial establishments, the question has arisen whether, by laying down on the spot plant for generating electricity and utilizing these now waste masses of fuel practically where they lie, and transmitting the current thus obtained for conversion into mechanical energy for the running of works at a distance, a very profitable enterprise might not be inaugurated.—*The Hardwareman*.

Description of American Engines for Russia.

IT has previously been announced that the Baldwin Locomotive Works are executing an order for forty locomotives for the Russian Government railways. These locomotives are all of the Vaucrain four cylinder compound system. Twenty of them will be ten-wheel passenger engines similar to the locomotive "Columbus," which was exhibited at the World's Fair attached to the train exhibited by the Pullman Palace Car Company, and the other twenty are consolidated freight locomotives, weighing about sixty tons each. The ten-wheel engines are to be constructed with six-wheel tenders generally similar to those which the Baldwin Works have built for the Delaware, Susquehanna and Schuylkill Railroad. This is also the style of tender to be furnished with the new high-speed Columbia type engine now in progress of erection for the Burlington road.

The specifications for the Russian locomotives call for copper fireboxes, iron tubes, cast steel driving wheel centres, and cast steel or wrought iron truck and tender wheel centres with steel tires. They will also be equipped with appliances for burning petroleum, the common locomotive fuel in Russia. In conformity with usual European practice, side-spring buffers are specified. The general construction throughout requires the substitution of cast steel where cast iron would be used in American practice.

The twenty ten-wheel locomotives were shipped on December 30th, and the balance will be ready for shipment in one month. This is not the first introduction of the Vaucrain compound into Russia, as there are already quite a number of them in use upon roads owned by the government and on private lines. The fact that they have done satisfactory service is attested by the magnitude of the present order. It is also encouraging to note that Russia has to such an extent developed an appreciation of the value of American manufactures.—*Railway Age*.

Oil and Steam Blast Forges.

MR. W. S. ROCKWELL, New York, is the patentee of a system with which, by the application of a principle in science, ordinary fuel is burned in forges in combination with steam to produce a most intense heat. The forges are placed wherever required in the works, and are fed from one central oil tank, which is capable of holding upwards of two car loads of oil. The oil is heated to about 150 or 160 degrees Fahrenheit, and then pumped through pipes from the tank to the entire system. Just before entering the furnace of the forge the pipe carrying the oil is joined by one carrying steam. The steam and oil are forced with a great pressure into the furnace. The force atomizes the oil, and it burns with the steam, creating a most intense heat. There is no smoke nor soot, the carbon being all consumed by the extreme heat.

The forges can be kept going continuously for an indefinite length of time, there being no clinkers to clog them. A great saving of time is thus effected, for the old forges heated by coal clogged every few hours, and required to be cleaned out at a loss of half an hour each time. In starting up these forges a suitable heat can be had in fifteen minutes, and a maximum temperature reached in short order, which, it is claimed, far surpasses the greatest heat possible in the old coal forge. The labor of attending to the forges is reduced practically to zero. The entire system throughout is a labor and a time saver, and, of course, a money saver.

—The Singer Sewing Machine Works, Elizabeth, N. J., U. S. A., are now at work on an order received from Hamburg, Germany, for 55,000 sewing machines. This is the largest order ever booked by the company.

Converting Coal Into Energy.

MR. WESTINGHOUSE, the well-known inventor, manufacturer and capitalist, confirms the announcement recently made that he has "solved the problem of converting coal into energy without the intervention of steam." In other words, he claims to have discovered a simple method for generating electricity directly from coal. The reputation of Mr. Westinghouse is an ample guarantee of his sincerity. What he says he undoubtedly believes. And there is no man more capable of judging what a new device in the development of power will accomplish. It is, therefore, reasonable to assume that the time is at hand for the discontinuance of the use of steam generators in developing electric force. With all the progress that has been made in steam engineering it has been impossible hitherto to utilize more than 10 per cent. of the power of the coal consumed. The waste of energy is enormous—beyond calculation. Of every 100 tons of coal consumed under boilers on sea or land 90 tons are lost. It is claimed that Mr. Westinghouse's discovery will save more than half this waste. If this claim should be verified by experience, the discovery would mark an era in human progress. The apparatus which is to perform these wonders is very simple in construction. Turning coal into producer gas is the idea. In doing this the least number of heat units are lost, so that the resulting gas contains 90 per cent. of all the heat units of the coal. While this gas has been used with great success for metallurgical purposes, it is not one that can be distributed for heat or light, so in the development of power the gas-producer apparatus must be located in close proximity to the gas engine. Thus the gas is easily converted into electrical energy. Since the alternating currents of 10,000 volts can be easily delivered and used, and by means of Tesla's multi-phase motors handled for the transmission of great power, it follows that sites can be selected for establishing the generating plants where coal can be conveniently delivered.—*Black Diamond*.

American Steamers for Russian Rivers.

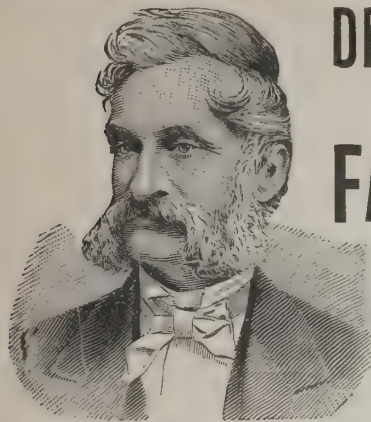
GREAT BRITAIN no longer has a practical monopoly in the construction of iron ships. The Belgian and German shipbuilders are close rivals, and have already gained material advantages through the stoppage of work in the North British yards. Hong Kong also is in a position to turn out and equip sea-going steamers in every way equal to the British home product and better adapted to the requirements of the Eastern trade; and while shipbuilding has nearly disappeared from the Mersey, and quite vanished from London, a Detroit firm has contracted to build several steamers for traffic on the rivers of Russia.

It is a lesson derived from the universal experience of all shipbuilding centres that it is almost impossible to rehabilitate this industry at a place where it has once suffered a decline. The result of the tie-up at Belfast and on the Clyde may, therefore, be of more than local importance; indeed, the pending struggle between employers and employees at those places is generally regarded in Great Britain in the light of a national calamity. The eyes of industrial England are turned with particular anxiety toward this country, as may be witnessed in the following outburst of the *London Engineer*: "The United States threaten not only to build locomotives and roll rails for humanity in general, but to supply the whole world with ships as well." In the production of iron and steel, with regard to quantity and quality as well as cheapness, the United States have already surpassed Great Britain; and the splendid steamers recently launched on the Delaware and the Great Lakes are in evidence to prove that we have the material, facilities and skill to match our kin beyond the sea in the construction of the steel leviathans of the deep. The turn of the tide seems at hand, and the commercial supremacy on the seas which was snatched from our hands in the early 60's through the substitution of iron for wood as building material for ships seems to be again within our grasp.

Mining by Machinery.

THE fact is manifesting itself that mining by machinery promises in the future to be, in a great majority of instances, the only mining method in vogue. In this respect the United States leads the world, and our machinery is being exported to all parts of the globe. There is no industry in the United States where the applicability and value of mining machinery is more apparent than it is in connection with coal mining. We have only to look at the pages of this paper to see the extent to which it enters into the business. There are the mining drills; there is the automatic haulage in mines; there are the coal cutters; there are the conveyors, all of which have brought about a saving of time and economy of labor which has enabled the producers to enter into the market upon a basis which otherwise would have been impossible. Of course, all this tends to bring about a revolution in the business conditions which prevailed years ago. From the amount of tonnage that is being mined and disposed of, it is readily seen that the coal producers of the United States are keeping pace with the tide of development.

—Lieutenant J. F. Meigs, U. S. N., retired, has returned from Europe, and has resumed his labors as expert in armor making for the Bethlehem Iron Works, of Bethlehem, Pa. While abroad he represented his firm in the competitive armor tests in Russia, and succeeded in winning a contract for 1,200 tons of Harveyized armor in 14½, 8 and 10 inch plates, to be delivered within a year. His firm defeated fourteen of the largest plants in the world. Lieutenant Meigs is an expert in gunnery, but was retired from the navy owing to some defect in his eyesight.



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Ayer's Cherry Pectoral,

For the rapid cure of Diseases of the Throat and Lungs.

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For purifying the Blood and the cure of Scrofulous Diseases.

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Warranted to cure all Malarial Disorders.

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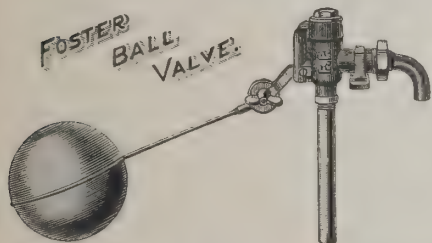
For Restoring gray hair to its Original Vitality and Color.

Ayer's Cathartic Pills,

The most valuable Home Remedy for all Purgative Purposes.

Prepared by Dr. J. C. Ayer & Co., Lowell, Mass., U. S. A. Dealers liberally supplied with almanacs, show cards, and other advertising material.

FOSTER'S Patent Automatic TANK VALVE.



New Principle. Closes in the direction of the flow without the aid of springs.

No Water Hammer.
NOISELESS.
NEVER LEAKS.

Sizes: 1/4-inch to 6-inch, inclusive. A 4-inch float operates any size.

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MANUFACTURERS OF

PORTABLE DRILLING MACHINES.

For Drilling for OIL, GAS, WATER and MINERAL PROSPECT WELLS.

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HAS NEITHER SPRINGS
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THE SIMPLEST AND BEST
MACHINE IN THE WORLD.



No. 2 MACHINE READY FOR WORK.

EXPORT PRICE LIST of STAR DRILLING MACHINES, Complete,
F. O. B., New York, U. S. A.

No. 0. For 250 feet	\$1075	No. 3. For 1200 feet.....	\$1750
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No. 1. Special for 600 feet	1350	No. 5. For 2000 feet.....	2225
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With the above Machines we furnish Drill and Sand Pump Ropes.

Drills with cable and solid tools.
Also Manufacturers of Drilling and Fishing Tools.
Write for Illustrated Catalogue.

De Laval Cream Separators



Immediate and absolutely complete separation of cream from milk by machinery.

75,000 machines in use in every country in the world.

A saving of 10 to 20 per cent. in any climate, and 25 to 100 per cent. in warm countries.

Perfect separation and greatly improved quality of products.

Machines simple, durable and easily operated.

SATISFACTION GUARANTEED.

—PRICES, \$75 to \$200.—

Hand or Power. Any Capacity.

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THE GOULDS MFG. CO.,

Pumps and Hydraulic Machinery,

WORKS AND MAIN OFFICES:

Seneca Falls, N. Y., U. S. A.

WAREHOUSES:

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DIAPHRAGM SUCTION PUMPS.

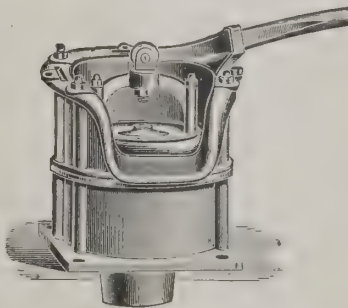


Fig. 1038.

Contractors, and upon vessels, and the many other places where a pump of this character can be used, and where a strongly built pump is desired, and one that will not only pump clear water, but water that is mixed with mud, sand, gravel, coal, sewage or any semi-liquid matter, will find in this pump the qualifications desired.

These pumps have 2 1/2 stroke, fitted for three-inch suction pipe and have a capacity of 1.47 gallons per stroke. Lift about 15 ft.

These pumps are made in two sections, securely bolted together. Instead of a plunger they have a practically indestructible rubber diaphragm. The valves are metal, rubber-faced, and so constructed as to offer the smallest possible obstruction to passage of any matter. The levers can be reversed by moving two bolts and swinging the lever socket around upon its pivot in the plunger yoke.

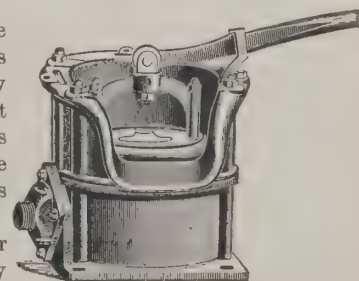


Fig. 1036.

We have lately reduced our prices on these pumps.

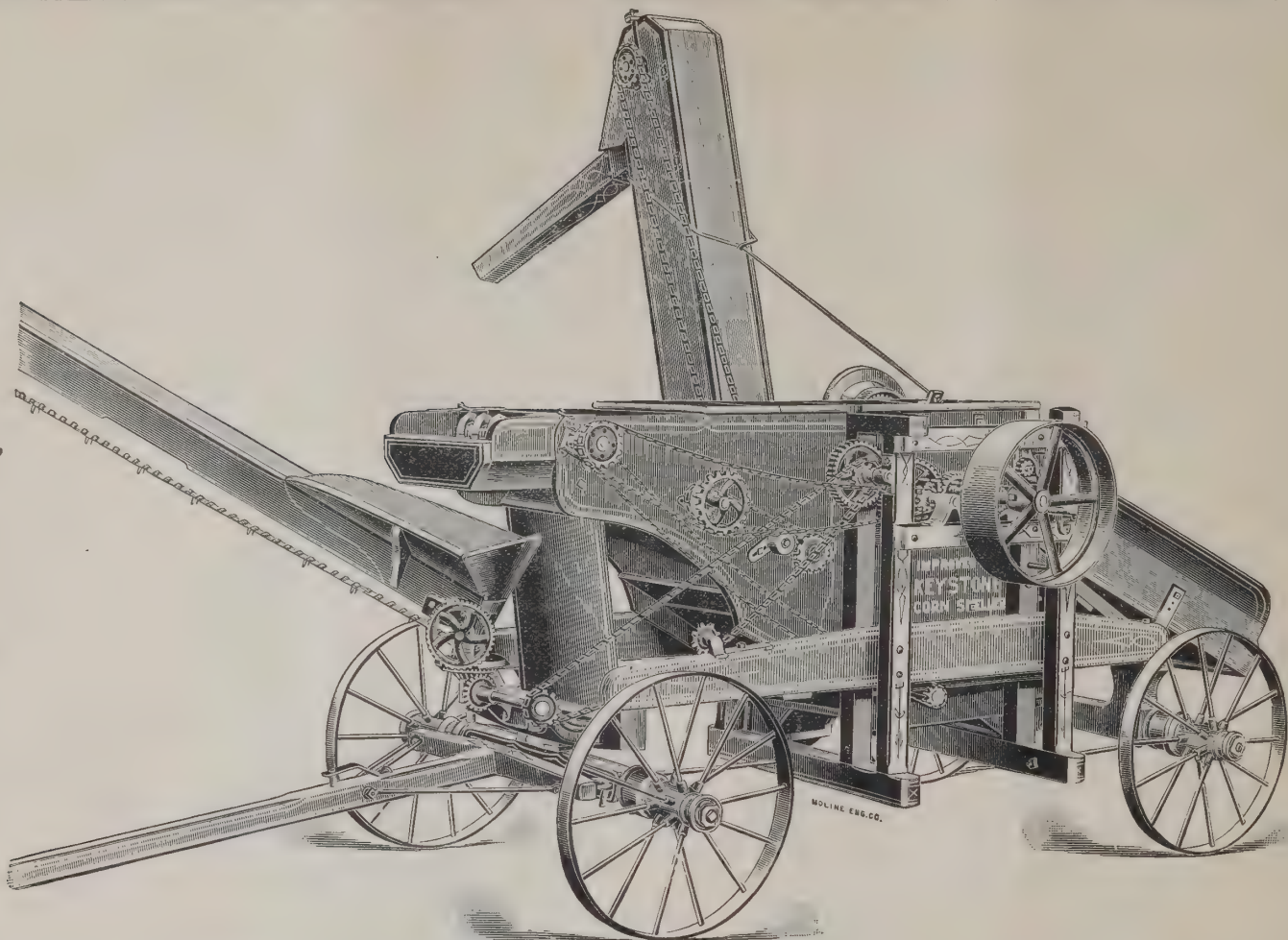
Get figures from your nearest dealer or commission merchant,
or write to us direct.

Correspondence will receive prompt and careful attention.

"Keystone" Power Corn Shellers

are guaranteed to be unsurpassed in amount and quality of work, power required and durability. Valuable improvements have recently been perfected.

6 HOLE,
4 HOLE,
2 HOLE
"Keystone"
ARE
SELF-
FEEDING.



"X. L."
"KEYSTONE"
"PONY"
ARE FOR
POWER
OR
HAND USE.

SEND FOR DESCRIPTION AND EXPORT PRICE LIST.

KEYSTONE MANUFACTURING CO.,

Sterling, Illinois, U. S. A.

W. & B. DOUGLAS,

Middletown, Conn., U. S. A.

The Oldest and Most Extensive Manufacturers of

**PUMPS,
HYDRAULIC RAMS,**

Garden Engines,
YARD HYDRANTS,
STREET WASHERS
AND OTHER
Hydraulic Machines
IN THE WORLD.

Awarded the *Grand Medal of Progress* at *World's Exhibition, Vienna, 1873*, being the highest award on Pumps, etc.; also, highest medal at *Paris, in 1867*, and *Philadelphia, 1876*, accompanied by Report of Judges.

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MANUFACTURERS OF

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**STRONG and
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Has stood the test in every civilized
country on the globe.

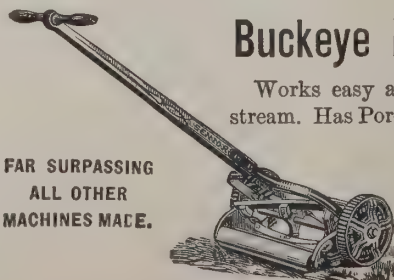
RUNS IN A LIGHT WIND.

**BUCKEYE
Senior Lawn Mower,**

MADE IN

10, 12, 14, 16 & 18 inch Cut.

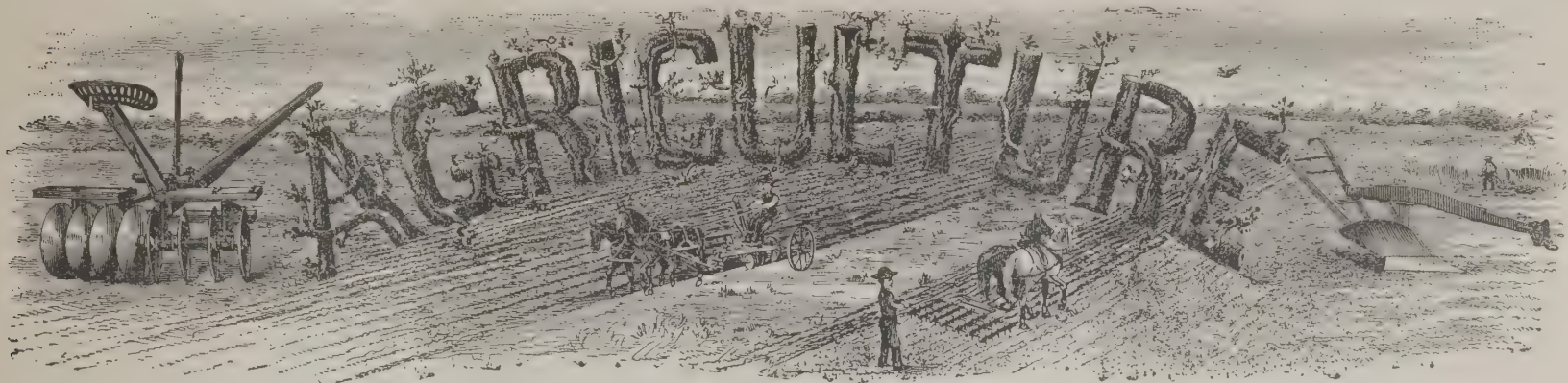
**STRONG, DURABLE,
LIGHTEST RUNNING.**



Buckeye Force Pump.

Works easy and throws a constant
stream. Has Porcelain-lined and Brass
Cylinders. Is easily
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est and Best Force
Pump in the World
for Deep or Shallow
Wells. Over 300,000

in use. Never freezes in winter. Send for Circulars and
Prices giving Depth of Well.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

American Wine Preferred to French.

THE fact that American wines sent abroad find favor in places where much of the French wine does not shows that only genuine American wine is exported, and this again gives a basis for the opinion that American wines ought to be able to enter into successful competition with those of other wine-growing countries.

There is one other point that should be noted. The French wine-raiser has been obliged to come to America to improve his own stock. For no vine plant in Europe could resist the destructive effects of the phylloxera, and it was only after nine years' experiment by a Mr. Franc with a hybrid obtained by joining the American *rupestris* and the French *cabernet* that a vine was obtained which resists the phylloxera insect easily. And this hybrid plant bears abundantly grapes which yield a beautiful red wine of fine "bouquet" of 12 per cent. alcohol, a rather low one, a medium between Burgundy and Medoc, and which won the gold medal at Paris this year. Much of the French wine sold in Paris is adulterated water. This is shown in a report from the municipal laboratory, in which the following statement is made: The grape is not necessarily an element in the production of wine. We commonly describe wine as the fermented juice of the grape, yet it is not always so, for much of the so-called wine is perfectly innocent of any acquaintance with the product of the vineyard. Recently the municipal laboratory of Paris, whose function it is to detect adulterations of food and drink, caused 15,000 casks of so called wine to be seized and destroyed. The official analysis could not detect in the whole lot a single drop of grape juice; but what it did detect was water, alcohol, sulphate of gypsum, glycerin, salts of potash and berries for coloring.

American Exports of Canned Goods.

OUR export trade in canned goods increased enormously during 1895. In the eight months ending September 1st we shipped over 35,000,000 pounds of canned beef to foreign markets, as compared with less than 30,000,000 in the corresponding period of last year.

The increase in dollars was from \$2,589,178 to \$3,205,709. Exports of canned fish for the same time nearly doubled. Shipments of salmon alone increased from a little over 6,000,000 to nearly 12,000,000 pounds, the average price per pound remaining practically the same—about 10 cents. The quantity of canned vegetables exported was smaller, but the percentage of increase here was over 100. For canned fruits it was about 40 per cent. No report is made of canned corn exports, except as included in miscellaneous breadstuffs.

These goods are sent to all parts of the world. A list of some 30 ports to which shipments of canned goods were made during the first week of November has been published. London heads the list with over 6,000 cases, valued at \$33,500. Bristol's purchases amounted to nearly \$20,000 and Bremen's to \$16,000. The list includes seven ports in England, and about as many in other European countries. Shipments of canned goods were made from New York that week to Italy, Norway, Sweden, Denmark, Holland, Mexico, five South American countries, Central America and every port of consequence in the West Indies. This export trade has been built up for the most part in a few years.

AMERICAN barb wire promises to gain a practical monopoly in South Africa.

It is landed at Cape Town, all charges paid, at much less than the prices quoted by English manufacturers. Spades afford another instance in which United States manufacturers have the advantage, and the same is true in a measure of the general line of agricultural implements. Our goods are always packed economically, our printed lists always give full particulars as to price and discounts, and the people of South Africa seem to favor goods that are American made.

THE United States is fast securing the bulk of trade with South American countries, especially in agricultural implements. Allowing for financial disturbances, our past year's trade with the Argentine Republic showed up proportionately better than that of Great Britain. In the United Kingdom, Germany, France and minor trade centres of Europe, the United States exported 50 per cent. more agricultural machinery during the fiscal year 1895 than in 1894, and this advance may be fairly attributed to the excellence of the wares sold.

Englishmen Complain of Adulterated Food.

AN English food specialist complains that what is sold in England as the "best English and Irish bacon" originated in America. A large quantity of American bacon is imported in a green, soft state—absolutely wet—from Chicago, and there are a certain number of people, both in England and Ireland, who dry it, and get it up so that it resembles best English and Irish, being in many cases sold at that.

Cheese, too, is another product frequently adulterated. "Filled cheese," as it is called, comes from America, Hamburg, Holland and—actually—Scotland, and is made up of various cheap products, such as lard, etc. By a clever device the cheese is made to look like the best kinds of American, Canadian or Dutch cheeses.

It is difficult to secure pure coffee unless purchased in the bean or from dealers of undoubted repute. French coffee is very much adulterated, and much of what is called French coffee in this country is "not French and not coffee!" Sugar, too, is an article too often adulterated to excite comment.

As for oatmeal, be swax, honey, pepper, cinnamon, licorice and many other products, these are adulterated to such an extent by some manufacturers as to make the profits resulting from their sale enormous. It is somewhat distressing to think that even "pure honey, fresh from the hive," with the actual cells in evidence, should be frequently little more or less than a fraud, the honey being made from various vegetables and other products, the amount of pure honey used being but a fraction of the whole.

The above is answer enough to Elisha Winter's declaration that "of all the principal civilized nations of the world, the United States, by almost universal consent, stands at the bottom of the list, so far as taking any national interest in the standard of its food supply."

We have no patience with those men who are continually belittling our own land. We like to think the United States quite well to the front in every reform. We believe it isn't always well to restrain your patriotic enthusiasm for fear of being called too patriotic. And so when men point to our country as doing less for its food supply than others we raise our protest. We give the above as proof that Mr. Winter is mistaken. And we believe—honestly believe—that we import as many adulterated goods as we manufacture at home—as many in proportion to the relative amounts of domestic and imported consumed. Let Brother Winter broaden his scope, and may his missionary zeal include England in the list of benighted countries that have no food standard.—*New England Grocer.*

Ascendancy of American Cheese.

AMERICAN cheeses have practically driven foreign cheeses out of the American market. Furthermore, the American product is "strong" in European markets. "Cheddar" cheeses are in as much demand in England as the huge Cheshire cheeses of that country. The "Cheddars" weigh about 65 pounds. The "Young America" has a great sale abroad as well as at home. It weighs 10 pounds, and four are put in a box. It is in great demand in Glasgow. Both these are cream cheeses.

Filled cheeses are more in demand, according to the dealers. There has been a prejudice against the filled cheese, but many manufacturers have come to think that it "stands up" better than cream cheese and does not become sharp so quickly. The filled cheese is made from skimmed milk, with the butter fat replaced by other fats. The Swiss and Limburger cheeses, it is said, are now made in America, and the fine English cheeses that are imported enjoy only a limited market.

"Chicago filled cheese" has been made in Hampshire, England, since the time of William of Wykeham, and was sold by London cheesemongers 400 years before the first hog squeaked in Chicago. The article is especially made for British and Southern markets, where there is a large demand for it by the merchants, who palm off adulterated food products on British working people and Southern small farmers and agricultural laborers, both white and black. For many years Canadian cheese dealers have worked off their lard-stuffed cheese in Great Britain as "prime American," while several American exporters have branded low-grade American as "best Canadian." But all the low-grade stuff is sold to the working classes, who don't know unadulterated food when they see it. The intelligent buyers know all American best brands, and prefer them to English or Canadian brands.

American Coal for Europe.

DURING the last two or three years our coal has been making inroads into the foreign coal trade of the world, and the signs are numerous and favorable to the conclusion that when trade conditions generally revive we shall see a remarkable development of our latest energy in that direction. The effect this will have directly upon the Eastern interests will be felt indirectly upon Western ones. Coal lines cross and recross each other at all points, and what advantageously affects the one, similarly in a relative degree affects the other. We have been at times frequently assured that new methods would ever be found to contract the use of fuel, to conserve its energy and increase its application of power, and that this would result in limiting the output of coal. But the contrary is the cause. The economy of power owing to the introduction of new machinery, throws it is true, laborers out of employment for the moment and decreases the immediate quantity of the coal consumption, but owing to a well-known economic law, the increased demand, which ensues under the altered conditions, enlarges the sphere of employment, more laborers are required, more work done and more coal ultimately consumed than ever before. This is the experience everywhere, and abroad despite all economy, an ever-increasing amount of coal must be consumed.

From whence will that supply be derived but from America? It certainly cannot come from continental Europe, for Europe, although it is capable of an infinite production of artistic, luxurious and semi tropical products, is crippled in its competition now by its lack and want of coal. Europe, too, is at present in a position of being an importer of coal, and there is every reason to believe that the maximum production of some of her chief centres has been reached. The extent of the coal regions of continental Europe, further, is not equal to that of Great Britain, being about 4,000 square miles of the former to 5,400 square miles of the latter. On the other hand, the United States with over 200,000 square miles, stands ready with an inexhaustible supply to meet the demands of the industrial world. This fact is not lost sight of abroad. The rise in wealth of other trading nations is no longer a matter of indifference to Britain, whose profits depend upon comparative and not absolute riches. The plains of North America and of Russia are her wheat fields, the cities of Chicago and Odessa are her granaries, Canada and the Baltic are her timber forests, Australia her sheep farm and the ranches of South America and the Western States of the Union her cattle preserves. She is a great commercial mart, and the basis of her commerce is her coal. Other countries mostly subsist upon the annual and the ceaseless income of the harvest, while Britain draws more and more, at an ever-increasing ratio, upon a capital which yields no annual interest, but which, when once turned to light and heat and power is gone forever. It cannot be renewed. What connection the recent influx of foreign capital into this country may have with a recognition of the coming exhaustion of the European coal fields is suggestive of an inference it is interesting to draw. The more, therefore, this matter is considered the stronger the conviction is forced upon us that a considerable and ever-growing trade will rise up in the immediate future between this country and Europe. The political economy of Adam Smith, the fundamental principle of which was that a country should develop to the full extent its natural resources, has worked with such unerring certainty in Britain, that so far as many of its coal beds are concerned it has well-nigh exhausted them, and the idea is beginning to be propagated that an export duty should be placed on coal with a view of keeping it in the country as much as possible and damaging foreign manufacturers. This should have the immediate effect of creating and enlarging markets in continental Europe for American coal.—*The Black Diamond.*

Specific Gravity of Lubricating Oils.

IF THE specific gravity be investigated in connection with increased boiling points, the increase is found to rise in regular proportion. The American oils, however, give entirely different results, as shown by the following table:

	Russian oils.	American oils.
Spindle oils.....	.893 to .895	.908 to .911
Light machine oils.....	.903 to .909	.920
Dark machine oils.....	.900 to .920	.884
Cylinder oils.....	.911 to .923	.886 to .889

The American cylinder oils, therefore, though having the highest boiling point of these distillates, have a far lower specific gravity than the other products. The density of the cylinder oils falls within the limits possessed by the dark machine oils and compound oils, and does not even approach the density of the spindle oils. A reversal of position takes place as the boiling point rises, so that the American oils of from .908 to .920 sp. grav., correspond in viscosity as well as in use to the Russian oils of .893 to .900 sp. grav., while oils of American origin ranging from .884 to .889 sp. grav. correspond to Russian oils with a gravity of .900 to .923. The difference of specific gravity in oils of the same viscosity is, therefore, from .015 to .20. The figures of the tables show further that the American cylinder oils are superior in viscosity to the Russian, and the Russian machine oils superior to the American, as has already been demonstrated in practice.

The preference for American spindle oils is, therefore, as demonstrated by experiment, not based on a higher viscosity, but on their lower price, better color and smell, and absolute purity. The American mineral oils lying within the limits of .884 to .889 sp. grav., and the corresponding Russian oils lying between .840 and .885 sp. grav., were not considered in the tables published by Kunkler.—*Notes by G. B. Heckel.*

—The United States exported \$4,442,468 worth of hardware during 1895.

Sheet Metal Cornice Work and Building Fronts.

IN no branch of business, except possibly the invention of electrical appliances, has the progressive spirit of the age been so fully developed as in that of the manufacture of sheet metal cornice work and building fronts. Only a comparatively short time since this work was unknown among the mechanical arts, while to-day, wherever the best results are sought in erecting buildings, the handiwork of the ornamental sheet metal worker is seen. The unparalleled growth of this branch of industry is remarkable. The explanation is found in the fact of a great and universal need.

Wood is an unstable material for the exposed position of cornices, fronts of buildings, etc. The constant variation between heat and cold, of wet and dry, so seriously affect it by warping, shrinking or rotting, as to put it out of the question for any but the most ordinary buildings. Then in case of fire it is not only of no protection, but worse than useless, inviting conflagration.

Stone for cornices and projections from the face of buildings presents even greater objections than wood. It is heavy, unwieldy, expensive and dangerous, involving great expense in getting out, in transporting and erecting, while in case of fire it is a source of danger, as it frequently falls and often crushes persons to death.

For years there has been a pressing necessity for a facing material with which to supplant wood, stone and brick that will protect a building from fire without, be a non absorbent and remain clean and free from discoloration. Such a material is supplied in copper or galvanized iron sheet metal cornice work and building fronts, which are being rapidly adopted by conservative and practical men because they are cheaper than stone, brick or cast iron, and will outwear any other building material. Galvanized iron ornamentation on buildings has given perfect satisfaction for half a century. Copper is indestructible and will last hundreds of years. These materials are easily and therefore inexpensively wrought into artistic forms and have a wide use in the remodelling of old buildings.

The above points, with much other valuable information, are fully elaborated and illustrated in a large catalogue issued by Gara, McGinley & Co., Philadelphia, Pa., U. S. A., describing their ornamental sheet metal building fronts, bay windows, cornices, weather vanes, chimney caps, skylights, gable trimmings, crosses, ventilators, corrugated iron roofs, sidings, awnings and many other adaptations for outside work.

The Coming Railroad Car.

MR. H. C. HODGES, president of the Detroit Lubricator Co., Detroit, Mich., U. S. A., has invented and is about to place upon the market a very striking, as well as valuable device, in the shape of a metal car, especially adapted for passenger, mail, or express purposes, as well as for use on ordinary street car lines.

It consists of a steel frame, somewhat on the same general line as the framework now used in the modern sky scraper office building, although differing radically in the mode of fastening together; the jolting and vibration of moving cars render it necessary that framework should be so adjusted as to offer the strongest possible resistance to sudden or strong strains, without too great rigidity, and these objects seem to have been obtained in a most ingenious manner. The casing outside of steel frame work can be of wood or any material desired, thus presenting the appearance of the ordinary railway coach.

It is claimed that in the item of cost alone, a saving of 30 to 35 per cent. can be effected, which seems very plausible. As to safety against fire in case of wreckage of train there seems to be no question of the cars being almost absolutely fire proof.

This system has been subjected to repeated and minute examination by prominent railroad men and car builders throughout the country and has met with unqualified approval, and it looks as if Mr. Hodges had invented the "coming car."

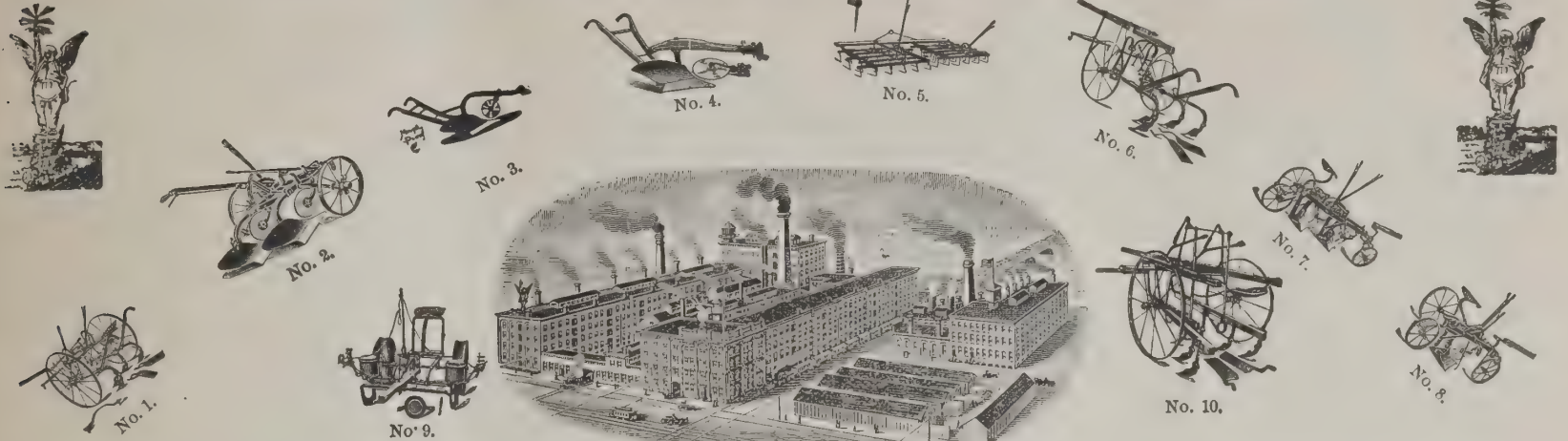
American Coal for Italy.

THE DAVIS COAL AND COKE COMPANY has received an order from Genoa, Italy, for 1,000 tons of Cumberland coal. This company had sent several samples of coal to that port previous to receiving the order. These samples were so satisfactory that an order for this larger quantity was given in order to make a more thorough test of the qualities of the coal. Should the coal prove satisfactory, there is not much doubt that still larger orders will be received and a trade with this port in the coal business established. The freight to be paid at 9s. per ton. At this rate it would hardly prove an attraction to steamers, which receive at the present time about .14s. to the United Kingdom. This order, however, is quite a compliment to the superiority of the products of the Cumberland coal region, and if the securing of a lucrative business depends alone upon the satisfaction which coal gives as a steam producer, and as a steady and sure burner, results may be predicted in advance, and, as usual, the American product will not play second fiddle to products from any other country.

Notwithstanding an advance in the price of labor in the United States, the cost per ton has decreased, and although labor is much better paid here than in Europe we can produce coal more cheaply than England, Germany, France or any other country in that part of the world. This advantage will enable the United States to undersell European countries in most articles of manufacture on our own grounds. And it will enable us, too, to successfully compete with them in non-manufacturing countries.

MOLINE, ILL.
U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
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MANUFACTURERS OF THE BEST GRADES OF

Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes. Beet Machines. Etc.No. 1. Dandy Combined Riding and Walking Cultivator.
No. 2. Wheel Walking Gang Plow, 24 inches.No. 3. Steel Beam Plow with Rolling Coulter S. B.
No. 4. Wood Beam Plow with Rolling Coulter.No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

Foreign Agencies:

PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.

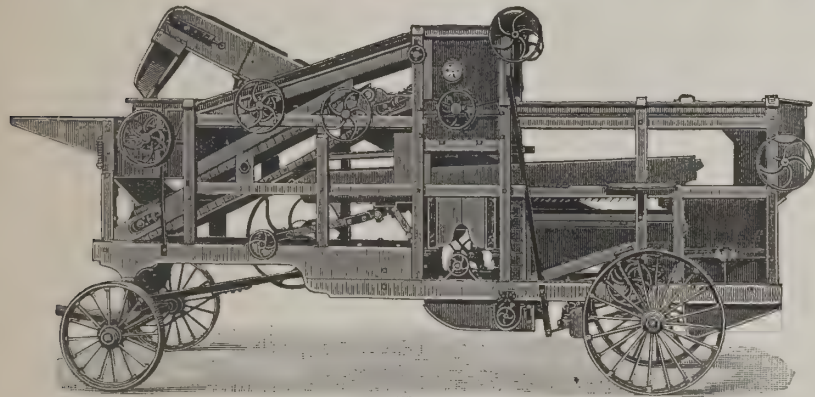
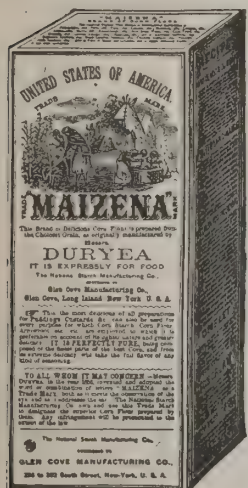
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Horse Powers,
Tubular Boilers and Iron Tanks**

OF ALL KINDS AND SIZES FOR LOCOMOTIVES

**Write us for DETAILS, PRICES and ANY DESIRED INFORMATION.****Is SUPERIOR to "CORN STARCH," "ARROWROOT," "SAGO," Etc.****TRADE MARK.**
MAIZENA
(DURVEA)

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

ENCOMIUMS TO ITS MERITS:LONDON, 1862. "Supremely Excellent."
BRUSSELS, 1876. "Notably Excellent."
PARIS, 1887. "Perfection in Preparation."CENTENNIAL, 1876. "Notably and Absolutely Pure."
PARIS, 1878. "Best Produced of Its Class."
FRANKLIN INSTITUTE. "Superior Merit."Gold Medal Awarded
"MAIZENA."Paris Exposition,
1889.

Put up exclusively by THE NATIONAL STARCH MFG CO., successor to (Messrs. DURVEA) GLEN COVE MANUFACTURING CO., N. Y. U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and 1/2 lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

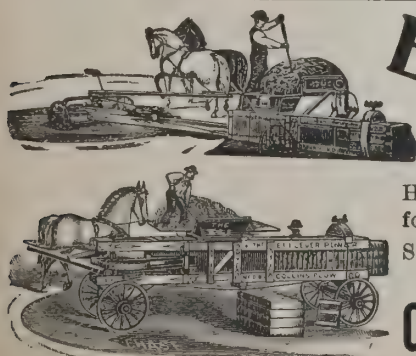
None GENUINE without "DURVEA" appearing on the face of Package.

HIGHEST AWARDS WORLD'S COLUMBIAN EXPOSITION.We make the most rapid **Hay and Straw Press** in the world.
Also manufacture **Harrows, Cultivators** and 140
different shapes and sizes of Riding and Walking**PLOWS.**

Send for Catalogues.

All kinds of
Hay and Straw Presses
for Horse and Steam Power.
Special attention to Export Trade.

ADDRESS,

COLLINS PLOW CO., QUINCY, ILL.,
U. S. A.

Motocycle Prizes Awarded "Times-Herald" Contest.

THE motocycle prizes were awarded December 4, 1895, by the judges after a four hours' session, in which the various points of excellence of the different vehicles were carefully weighed and considered. Last June *The Times-Herald*, of Chicago, offered \$5,000 and a gold medal as prizes to be awarded in a competitive examination and a road race. The following are the awards as made by the judges:

An award of \$2,000 to the Duryea Motor Wagon Company, of Springfield, Mass., for best performance in the road race, for range of speed and pull, with compactness of design.

An award of \$1,500 to the H. Mueller & Co. motocycle, of Decatur, Ill., for performance in the road race and economy in operation.

An award of \$500 to the R. H. Macy & Co. motocycle, of New York, for showing made in the road race.

An award of \$500 to the Sturges Electric motocycle, of Chicago, for showing made in the road race.

An award of *The Times Herald* gold medal to the Morris & Salom electrobat, of Philadelphia, for best showing made in the official tests for safety, ease of control, absence of noise, vibration, heat or odor, cleanliness and general excellence of design and workmanship.

The following special awards were made by the Committee on Tests for meritorious points in design:

An award of \$200 to the G. W. Lewis motocycle, of Chicago, for friction driving device, and brake and reduction gear for increasing speed.

An award of \$150 to the Haynes & Apperon gasolene motocycle, of Kokomo, Ind., for plan of preventing vibration by balance of driving engines.

An award of \$100 to the Max Hertel gasolene motocycle, of Chicago, for a device for starting the motor from the operator's seat in the vehicle.

An award of \$50 to the De La Vergne Refrigerating Machine Company, of New York, for counterbalance on engine.

American Oil Abroad.

WITH a total export of American petroleum of 276,091,241 gallons to November, 1895, it is very evident that the dangerous competition of Russian oil in the foreign markets has been postponed to some other year. The exports already exceed by 6,000,000 gallons those for the same period of the previous year, and the Schuylkill is full of vessels waiting to be loaded with case oil for Japan and India.

The increase in trade in the face of a higher price for oil than has ruled for years shows that the danger to the American oil trade from Russian competition is not to be feared. While the production of Russian oil is doubtless large, the Russian crude produces a much smaller percentage of the refined article than American oil. The Russian oil deposits lie far inland, and the oil for export must be hauled or pumped over the divide between the land-locked Caspian and the Black Seas before it can reach a port of shipment. It can be widely distributed by rail and river through Russia itself, but this makes its field of distribution chiefly local.

While American oil is produced in the present quantities at a price not higher than the average for the current year it is certain to command a steadily expanding foreign market. There is more danger that the supply of American oil may fail than that it will be driven out of European and Asian markets by the competition of the Russian product.

An American "Boss" on European Railways.

OUR American namesake gives the following as the views of Mr. Depew, the well-known railroad president: "The general verdict on the International Railroad Congress was that our representatives were most hospitably entertained by their British brethren, but learned nothing from Europe which would be useful in America. They have adopted our air brake, but distrust the automatic coupler. They prefer to have a man go between the cars and turn a lever, which slowly winds a screw. It takes five times as long to make up a train by this process as by the automatic coupler. The racing between the rival lines running north has resulted in remarkable speed within a month, but considering the weight of the train, the stops made and the uninterrupted continuance of service for years, the Empire state express still holds the pre-eminence. The Government controls the French railways and is very proud of its "train de luxe," which leaves Paris twice a week for the Pyrenees. It is the best equipped and the fastest they have. The distance from Paris to Lucon is only a few miles difference from that between New York and Buffalo. My boy and I tried it. We had 170 pounds of baggage and two berths in the sleeper. They have no double berths. The fare, the sleeping car and the extra baggage cost \$75. The time occupied was 16 hours. The same service on the New Central between New York and Buffalo costs \$23, and the time required is only 10 hours.—*Railway Review, England.*

THE Perfection Camp Stove is the invention of W. H. Gruenhagen, of St. Anthony Park, Minn., U. S. A. The stove can be easily reduced to an 8x12x20 size with pipe, pans, legs, etc., packed inside for transportation. This stove has strong merits as a wagon stove, having plenty of pipe for setting up. It is very easily knocked down for transportation, and is easily set up again. This stove is constructed of No. 24 sheet steel, well ribbed with steel braces, with a tin oven and sheet-iron bread pan. The large size has two holes for cooking.

Growth of American Silk Manufacture.

THE manufacture of silk in the United States began less than forty years ago at Paterson, N. J., in a small room over a machine shop. The industry has grown to immense proportions, the factories occupying hundreds of acres, and their annual output of finished goods now amounts to \$20,000,000. The raw silk market of the world amounts to \$400,000,000 annually, one-quarter of which is imported into this country.

From the small beginning of two decades ago there are now 400 silk manufacturing establishments in operation. The 400 factories employed 51,000 people, and the annual wages paid was \$19,000,000. There were also 52 establishments for dyeing and finishing goods, with a capital stock of about \$2,500,000, paying \$1,254,798 in wages.

We are now manufacturing every article made in older silk countries, and our goods are classed as fully equal to the foreign product. American inventive genius has wrought marvelous improvements in mechanism, speed and artistic effect. Improved machinery for the manufacture of silk, invented and made by a Connecticut firm, is being shipped to England, Russia, Switzerland and Japan, and is accorded a high standard of excellence.

Ceilings of Steel.

A RECENT development of the use of steel in building is in the line of ceilings. Sheets of thin steel, stamped with ornamental designs appropriate to the room, are substituted for plaster. Aside from lasting qualities, steel ceilings have been found useful in preventing the spread of fire. In public buildings, and more especially in schools, the utility of steel ceilings has been shown, and they are coming into more general use constantly. A plaster ceiling, however well constructed, is subject at all times to injury and sometimes to the danger of falling through the action of water, which, by gathering between the upper surface of the plaster and the connecting beams, breaks the clinch of the hair in the lime, and will sometimes overrun an entire ceiling without any knowledge by occupants of the apartment. This is one of the dangers of plaster ceilings which many persons do not take into account, for they discern danger only where the ceiling is cracked, and, as long experience shows, cracked ceilings seldom fall, the breaks in the plaster allowing a vent for the accumulated moisture, whereas a ceiling outwardly intact and at no point cracked is in much greater danger of falling.

Russian and American Petroleum.

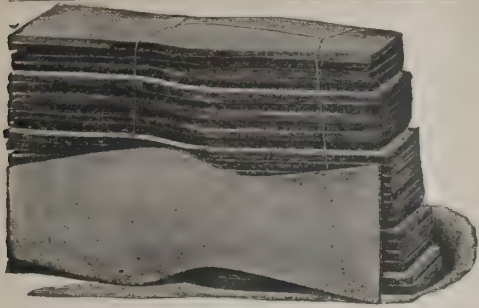
A PECULIAR fact in respect to petroleum is the difference of conditions under which that oil occurs in Russia and America. In the former it is found in strata of the tertiary period, usually a formation resembling a quicksand and at depths of only a few hundred feet—in our own country it occurs at great depths in the older compact sandstones and limestones of the Carboniferous, Devonian, and Silurian periods. The oil of Russia consists of a class of hydro-carbons, known as naphthenes, belonging to the benzene groups, while our American oil is mainly composed of paraffines; it is to this difference that the great variation between the products from these oils is due, for, while American oil yields a very large proportion, say about 70 percent., of illuminating oil exactly suited for combustion in our ordinary lamps, the Russian oil produces far less of such oil and a larger proportion of high-class lubricating oil. The Russian illuminating oil also requires to be burned in a modified form of lamp with a more perfect draught, in order to overcome its tendency to produce a smoky flame, and it is largely this fact which has prevented the consumption of Russian oil for light abroad.

Increasing Demand for American Products.

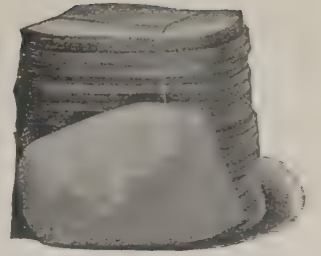
THE exports of mineral oils show the greatest ratio of increase, but in other less important departments of the export trade the gains have been notable. The value of miscellaneous cotton goods exported for nine months has risen from \$2,196,854 to \$3,015,192. In machinery there has been an increase from \$7,256,596 to \$8,420,888. The value of locomotives exported is \$1,315,443 for the first three quarters of 1895 against \$689,502 for the first three quarters of 1894. In miscellaneous iron manufactures there has been a gain of a million on last year's export of about four millions, and on leather and its products there has been a nearly proportionate gain by an increase from \$11,194,793 to \$13,885,842. There are, in fact, but few of the products of our manufactures which enter into the export trade that do not appear to be in increased demand abroad. The trade has everywhere the promise of assuming such proportions as will make it manifest that the United States have fairly entered into the industrial competition of the world.

AMONG the orders lately received by the Shultz Belting Company, St. Louis, Mo., U. S. A., was one for 18,000 feet of belting from Russia. Last week they shipped 4,000 feet of belting to London and 4,000 feet to Sweden.

AS showing the increase of leather exports from Boston, Mass., U. S. A., during the past year, the following figures are significant: Total value for 1895, \$7,885,459; same period a year ago, \$4,473,666. A business which nearly doubles itself in 12 months promises important things for the future. Boston is certain to see a still larger growth in her exports of leather during the next few years.

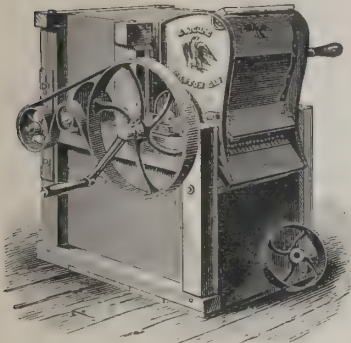


Shoemakers and Shoe Repairers save Money, Labor, Waste and Time when they use Cut Sole Leather (Soles, Half Soles, Heel Lifts, etc.) Prices and full particulars will be furnished on application.



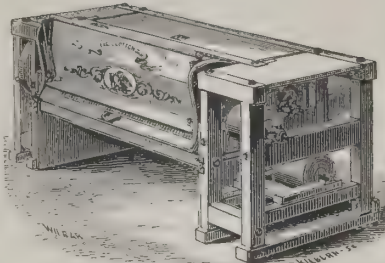
BAXTER, STONER & SCHENKELBERGER,
BOSTON, U. S. A. LONDON, ENGLAND.

EAGLE COTTON GINS.

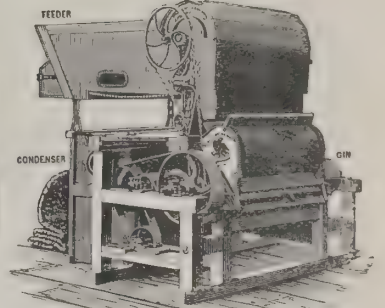


These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details, illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

Eagle Cotton Gin Co. { FORMERLY Bates, Hyde & Co. } Bridgewater, Mass.

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HAVEMEYER BUILDING, NEW YORK, U. S. A.

A complete line of Machinery for Plantation Use

CONSISTING OF

DRYERS, PULPERS, WASHERS, HULLERS, Polishers, Separators, &c.

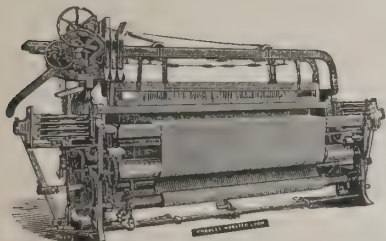
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ROASTERS, COOLERS, STONERS, CLAZERS, &c.

MANUFACTURERS OF

COFFEE MACHINERY

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OPEN SHED LOOMS

For all kinds of Fabrics of Cotton, Wool and Silk; also Dobbies, Jacquards, etc.

When ordering through Commission Houses please send us a duplicate of your order.



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CANNOT BE BROKEN.

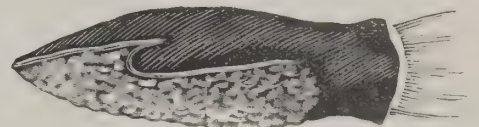
SAFETY KETTLE BOTTOM.

Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

Stove Polishing Mitten,

FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands. \$18.00 per gross F. O. B. at New York.



For Particulars address **DIAMOND HARDWARE CO., 620 Atlantic Ave., Boston, Mass., U. S. A.**



EMPIRE MOULDING WORKS,

ROCHESTER, N. Y., U. S. A.

— MAKERS OF —

AGENCIES:

L. H. DODGE & CO.,

115 FINE ST., E. C., LONDON.

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Moulding and Frames

In greatest variety for export.

Illustrated Catalogue "A" on application.

THE
"CHALLENGE"
LEADS
THEM ALL.

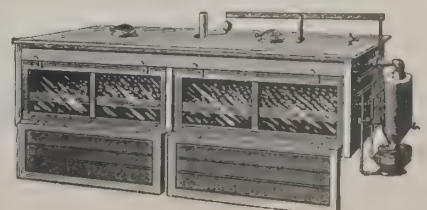
This machine has been exhibited in competition at all the leading shows in the U. S. Never in a single instance has it been defeated.

It is a perfect self-regulator and is supplied with an automatic egg turner making it so simple that even the most inexperienced can manage it without difficulty. It will run perfectly in all climates.

Sold through all export houses in Boston, New York and Philadelphia.

FOR COMPLETE DESCRIPTION SEND FOR CATALOGUE "B."

WOOD & PAIGE, - Lynn, Mass., U. S. A.



Defender of High-Speed Record.

THE superiority of the American railroad over the foreign systems has been demonstrated at last beyond any dispute by the record-breaking run of the Empire State Express. This lightning-like racer of the rails made the distance between New York and Buffalo at the average rate of 53 1-3 miles an hour, and one distance of 81 miles in 80 minutes, or a speed of over a mile a minute. The highest speed of the regular English trains is 51.75 miles an hour. America now scores the record of 53.33 miles an hour. This news will be a relief to many Americans who have been disconcerted ever since the recent reports of wonderful British railway dashes.

The best time made by the fastest passenger trains of the great nations of the earth may be summarized as follows:

	Miles per hour.
England.....	51.7
Germany.....	51.2
France.....	49.8
Belgium.....	45.0
Holland.....	44.7
Italy.....	42.3
Austria-Hungary.....	41.7
The New York Central (America's greatest railroad).....	53.3

The New York Central's Empire State Express, the most famous as well as the fastest regular train in the world, has a remarkable record. For more than four years it made its daily run of 440 miles in 520 minutes, which is a rate of 51 miles an hour, including four stops and 28 slow-downs, and when that time was beaten by a regular train on one of the English lines, the time of the Empire State Express was quickened, so that it now makes its daily run of 440 miles in 495 minutes, which is a rate of 53.33 miles an hour, including the four stops and 28 slow-downs.

Patent Grain, Stock, Fruit, Coal or Coke Cars.

FOUR very interesting cars have been placed in service on the Baltimore and Ohio Railroad. They were the beginning of what may revolutionize the designs and uses of freight cars. Each car was a combination suitable for the transportation of grain, coke, coal, stock or fruit. The construction is such that by the temporary removal of every other board in the sides of the car, a load of grain or stock can be brought East and a load of coke can be taken West on the return journey. The bottoms of the cars are drop doors for the unloading of ores and fuels. The Campell & House patent is employed. The cars were built at the South Baltimore Car Works, and are fitted up with air brakes, patent couplers, and all modern improvements. They were constructed by the Chicago and Blue Island Railway, which is controlled by the Illinois Steel Company of Chicago. They were taken to Broad Ford, where they were loaded with coke for the Illinois Steel Company. A car of the same build was loaded at Leith the week before. Everything worked satisfactorily at both places.

American Tin Preferred.

PEOPLE who have doubted the ability of American manufacturers to produce tin which would compare favorably in quality with the foreign product will be interested in knowing that the packers in Kansas City, U. S. A., who are among the largest consumers of tin in America, are gradually increasing their orders for the home product. The Armour company, which used in 1895 about 35,000 boxes or 7,000,000 pounds of tin in the manufacture of cans for its products, has placed orders for about 1,000,000 pounds of American tin with the manufacturers in Indiana.

"The Armour company has been importing most of its tin from Wales, but it is increasing the proportion of American tin used each year. The American product is apparently as good as the tin from the other side—in fact the American steel plate in our tin is rather better than that of the imported article; and if we judge by the facts our American people are manufacturing tin a trifle cheaper than the foreign manufacturers."—*Star*, Kansas City, Mo.

THE world's copper production for 1894 is estimated at 715,435,840 pounds, of which the United States produced 860,844,218 pounds, equal to 50.4 per cent. of the whole. Montana alone returned an output of 186,310,472 pounds, being 51.6 per cent. of the United States, and 26 per cent. of the world's production. At the present rate of consumption we estimate the amount of copper actually required for domestic use to be from 70 to 75 per cent. of the production of this country, leaving available for export only about 25 per cent. of the total output. Electric power for railways, and electricity for purposes of illumination, is the popular demand. This is the electric age and we are just in the beginning of it, and the utilization of this wonderful force in bringing copper more and more in popular demand.

A CORRESPONDENT writing from Johannesburg, South Africa, calls special attention to the immense tool trade done there. He adds: "But the Americans are more and more getting into this market for such things as iron planes, hammers, screw-bits, etc. There is a claw-hammer sold here, Cheney, No. 5, 1½-inch, by hundreds. I have seen several English travellers' samples of that pattern hammer, but have never seen one to equal Cheney's. It is well worth the English manufacturers' time and special attention to this part of the South African market, as there is an opening for all classes of goods in the near future." Why should this be so?—*The Ironmonger*, London.

The Era of Skilled Labor.

SKILLED labor is in greater demand than ever. In some trades it is at a premium, and there is a confessed paucity of the best material. There are various reasons both for the scarcity and the demand. In new and constantly multiplying mechanical appliances we have conditions that insist on special abilities. Some of these involve not only a deftness and dexterity of hand, but a mental grasp of all that is related or contributory to the end in view. In others it is simply a special and trained aptitude for but one link in a series to complete the chain. In the process of production each man has his place, and to be efficient each human cog in the wheel must keep time with the rest. It is evident that in so perfectly arranged a system, the directive skill of the machine must be of a high order to be run successfully. The superintendence of a large plant under these conditions involve heavy responsibilities, and requires much more than a mere technical knowledge of the trade. Here the foreman has to be more than a mechanic. The same principle has been recognized in all the professions. In literature, law, medicine, science, etc., education on one point presuppose a knowledge or a study of all other matters related to a special pursuit. In the focus of these we have the capable lawyer, physician, or scientist. The industrial world has to revolve on the same axis, and the successful manager of a modern plant has to understand not only what a machine can and ought to do, but the nature of the material he uses, what its technicalities signify, and the bearing of other related products on the value of the one he handles. All this is in the line with the progress of education.

Aside from this, it is also a fact that competition demands increasing productive power at a declining rate of time and cost. The best machine and the best man are co-ordinate in modern conditions of manufacture. As labor is being rapidly released from many of its old forms of hand work, even to the excavating of sewers and the digging of coal, the demand for skilled labor as apart from more physical force will increase. To keep pace with these new conditions, we are establishing our manual and technical schools, and rubbing up some of the forgotten duties and claims of the apprenticeship system. They all converge on one point—the era of skilled labor—*Age of Steel*.

THE popularity of American shoes in Europe and other regions abroad is steadily increasing. The exports show a constant increase. During one week 7,443 pairs of shoes went from Boston to England, and in the same week New York shipped abroad \$14,270 worth of shoes, 34 cases of this quantity, valued at \$2,000, going to Constantinople. During another week \$10,000 worth of American shoes were imported into England.

ONE of the papers read before the annual meeting of the American Association for the Advancement of Science enlarged on the wonders of modern engineering. Coal was referred to as a fossil, a preserved plant tissue, yet a man can mine enough of it in a day to obtain 133 horse-power for ten hours, equivalent to the physical labor of 1,300 men. In Great Britain coal does the work of 100,000,000 men. By improved mechanical appliances, the American farmer raises as much grain as three in England, four in France, five in Germany and six in Austria. In the United States one man can feed 260, whereas in Europe one man feeds only thirty persons. The author predicted that in the end the advance of engineering will obliterate the line between capital and labor in a manner satisfactory to all concerned.

AN English carriage journal, in commenting on the decadence of the carriage trade abroad, blames some of it on what it calls the disease of cheapness which now commands the trade to a serious extent. The unscrupulous trader who puts the parts of a vehicle together for sale, indifferent about durability or taste, seems to be getting and keeping the trade, compelling others in self-defense to do the same. This tendency is, however, accompanied fortunately with another tendency to finer work and to the embodiment of improvements, especially in what are called touring carriages, mostly breaks and omnibuses. This touring fad is on the increase; but whether it will be supplanted by the horseless carriage remains to be seen. The regret is expressed by this authority that the carriage trade allowed the cycle trade to pass and be picked up by any one that had some smith's experience and a workshop. Now, it is larger than coach-making.

THE commercial utilization of water powers and other sources of energy now going to waste promises to be one of the features of industrial progress during the twentieth century. When we realize that at Niagara alone the water power is equal to the aggregate of all the steam power now being generated on this globe, the immense possibilities of the future in the line of cheap power obtained from this and other sources becomes more apparent. The opening of the Buffalo and Niagara Falls Electric Railway, which obtains a part of its current from the new plant of the Niagara Falls Power Company, may be considered as marking an era in electric railway development. Electric railway companies are growing to be among the largest single users of power, and are likely to become before long the most important, so that they will be among the first to profit by improvements of this character.—*Street Railway Journal*.

—A big demand exists for cranes to be operated by steam or electricity in lifting and carrying loads about machine shops and foundries. They enable 50 per cent. more work to be done in the same time with less labor than by the best old methods. Electric cranes pick up loads weighing tons and carry them as fast as a man can walk.

American Tapestry & Decorative Co.



30x72 in., \$75; 50x90 in., \$150.



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Tapestry Paintings.

2,000 tapestry paintings to choose from; 38 artists employed, including gold medalists of the Paris Salon.

Send for Circular.

Decorations.

Write for color schemes, designs, estimates. Artists sent to all parts of the world to do every sort of decorating and painting. We are educating the country in color harmony. Relief, wall paper, stained glass, carpets, furniture, window shades, draperies, etc. Decorating houses in foreign countries a specialty. Pupils taught decoration. "SPECIAL ARTISTS FOR CHURCH DECORATION."

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Tapestry Materials.

We manufacture tapestry materials. Superior to foreign goods, and half the price. Book of samples, 10 cts.

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Douthitt's Manual of Art Decoration.

The Decorative Art Book of the Century. 200 Royal Quarto pages 50 full-page original illustrations of unique interiors, etc. \$2.50, postage prepaid.

The Goddess of Atvatabar.

A Trip to the Interior World. "Jules Verne in his happiest days outdone." 318 octavo pages, 44 illustrations. Price, \$2.50, postage prepaid.



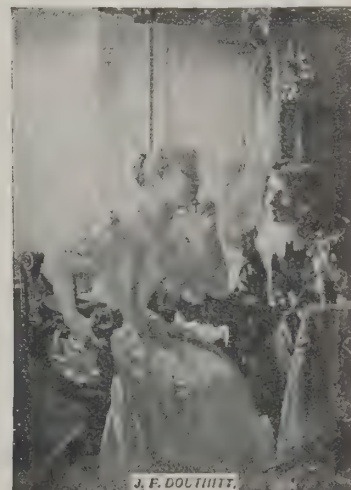
30x72 in., \$75; 50x90 in., \$150.



30x72 in., \$75; 50x90 in., \$150.



30x72 in., \$75; 50x90 in., \$150.



30x72 in., \$75; 50x90 in., \$150.

J. F. DOUTHITT,

286 Fifth Ave., New York.

KENSINGTON, LONDON.

Industrial Notes.

—In a single recent week 7,443 pairs of shoes were exported from Boston to England. British shoes are "not in it" with ours.

—Florida supplies first-class cedar in the manufacture of lead pencils, and large quantities are yearly exported to European countries.

—A Boston, Mass., U. S. A., shoe manufacturer has established salesrooms in Berlin, Germany. The local makers find it hard to compete with the American goods.

—One thousand tons of California wheat has been delivered in Sydney. Orders have been placed in California for enough wheat to cover the deficiency in Australasia.

—The United States now controls the world's iron trade, producing about 11,000,000 tons annually. England, the former mistress of the trade, produces only 6,709,000 tons.

—An American electric tramway is to be constructed through the streets of Lima, Peru. The authorities have granted a concession to a company of American capitalists for this purpose.

—Last week the Harrisburg, Pa., Foundry and Machine Company received an order for its high grade engines for an electrical plant in South Africa. The engines are to be directly connected with generators.

—The largest single piece of machinery shipped across the country was recently sent from Philadelphia to Joliet, Ill., U. S. A. It was an immense fly-wheel, which measured 28 feet in diameter and weighed 180,000 pounds.

—The catalogue and price list of the Henry Seymour Cutlery Company, 84 Chambers street, New York, has come to hand. It fully describes and illustrates the large line of shears, scissors and sheep shears manufactured by the company.

—The feathery pampas plumes that, either of their natural hue or gaudily colored with dyes, are used in so many ways for decorations come largely from Southern California. Santa Barbara County has a crop of a little over 1,000,000 plumes this year.

—The transfer from England to the United States of the control of the world's iron trade, which is now in progress, means far more than our English friends seem yet to have fully realized, and following this will come the transfer of the control of textile interests.

—The Mossberg Manufacturing Company, Attleboro, Mass., U. S. A., have just shipped to England a seven-ton rolling mill. This is the second one this firm have sent to Sheffield, England. The Englishmen say that the American workmanship is better than their home production.

—It is said that British workingmen's papers are advising their readers to buy certain American-made goods in preference to English on the ground of superiority and better prices. Among the articles especially mentioned are carpets, boots and shoes, furniture and silverware.

—An English exchange says an extensive wholesale chair and cabinetmaker will greatly improve his plant at Manchester by the addition of new machines, among which will be "several American boring, planing and cutting machines, which will, it is anticipated, effect a great saving as against hand labor."

—The Lodge & Davis Machine Tool Company, Cincinnati, O., U. S. A., have closed a large deal, through their English agent, with an extensive bicycle manufacturer of Coventry, England. The contract specifies the complete equipment of the plant, and will consist of several car loads of machine tools.

—The Buffalo Forge Co., Buffalo, N. Y., recently shipped a large theatre heating and ventilating outfit for Port Londonderry, Ireland, the order coming in the form of a cablegram. The apparatus was shipped within a week of its receipt, it being a special job. The fan has a capacity to move 8,000,000 cubic feet of air per hour.

—The Keystone Manufacturing Company, Sterling, Ill., U. S. A., has an improved Keystone power sheller. Testimonials are coming in daily from every quarter testifying to the wonderful shelling capacity and clean work done by this machine, 400 bushels per hour having been shelled by a four-hole mounted Keystone. Foreign buyers should make a note of this and write for catalogue and terms.

—Some idea of the magnitude of the bicycle industry may be gained by contemplation of the fact that one ball-making concern, the Cleveland Machine Screw Company, is now making balls in bicycle sizes at the rate of 600,000 per day, and has orders for 104,000,000 for this season. They expect this season's output to reach 125,000,000, for which will be required about 200 tons of tool steel.

—"A novel feature in the Stanley show is the presence of a number of American firms, whose machines compare well with those of our best makers. A comparison of the two types shows, as was to be expected, that each has something to learn from the other. As regards general lines, the Americans have naturally followed English practice, but in one or two minor details they have effected improvements which should add greatly to the comfort of the rider."—*Engineering, London.*

—A nailless horseshoe consists of a band of metal an inch high and fits around the lower edge of the hoof. A projecting flange is made to fit into a groove which runs around the outside of the shoe. When the band is fitted to the hoof (which is done very readily) the shoe in turn is attached by slipping the flange into the groove. It now remains to clasp the arrangement by two screws in the rear. These may be turned to any degree of tightness desired,

and a moderate degree is sufficient to prevent the shoe from coming off. The whole arrangement may be put on or taken off in a moment.

—The American-China Development Company was incorporated at Trenton, N. J., last week with a capital stock of \$1,000,000. The objects of the company are to establish and operate steam and electric railways and steamship, telegraph and telephone companies in China. The incorporators are Frank Frenholm, New York; Dewitt H. Lyon, Greenwich, Conn., and Samuel S. Walters, Jersey City, N. J.

—The Delaware Iron Works of New Castle, Del., U. S. A., have just completed an order for 600 trolley poles for Cairo, Egypt. It is said a destructive ant in Egypt plays havoc with wooden poles for wires, and makes it necessary that iron poles be substituted. The Delaware Iron Works have filled several orders for trolley poles for Cairo, and are now engaged on an order for iron poles for Cape Town, Africa.

—A St. Louis firm of manufacturers, whose reputation is a guarantee on the machinery they offer, are said to have in hand some highly improved decorating machines for ramie fibre. The ramie plant is one of the natural bonanzas which can only become available by means of man's inventive skill. The experiments have necessarily extended over a long period, and complete success is hoped for by these gentlemen.

—The F. W. Foster Manufacturing Company, Boston, Mass., U. S. A., had an attractive exhibit at the late Mechanics' Fair held in Boston. They had a full line of the Foster patent ball cocks, including their six-inch make, on exhibition, while some of the smaller sizes were in practical operation. They received the highest award, a gold medal, which they certainly deserved, and which proves that they are an article of practical value.

—The study of American processes and methods by the ironworkers of Europe is not without its significance. It is a tacit admission of inferiority on one side, and of evidence without reserve as to the leadership held by the American manufacturer in these special lines. The procession moves on elsewhere as here. Science has no night cap and progress no halt, and in brain as in brawn the edge of competition is kept rubbing the hone.

—The Phoenix Iron Company, of Phoenixville, Pa., U. S. A., has received the third large order from Japan for solid upset steel eye-bars for bridges in Japan. The company has the reputation of being one of the leading manufacturers of special open-hearth steel eye-bars in the country. These bars, in the ordinary course of events, would have been made in Europe, but the Japanese engineers positively refused to have anything but American manufacture.

THE G. & H. BARNETT COMPANY, 21-43 Richmond street, Philadelphia, have been awarded a grand prize by the Committee on Awards of the Atlanta Exposition, in recognition of the superior merits of their files. The Black Diamond File Works, established in 1868, have established a reputation throughout this country for producing superior goods.

AN English expert, who recently visited this country, said: "More steel can be purchased for a sovereign in the United States than in England, and I am desirous of learning the minutest reason for the fact." We think the main cause is in our greatly better machinery and greater expertness and celerity of our mechanics. We have better tools and better craftsmen to use them. The price of fuel in England is telling on prices of finished product also, and it will be felt more and more.

ONE reason why it has been so difficult for American manufacturers to build up trade in Mexico, Central and South America, has been the difficulty of getting paid for goods when sold, because of inadequate banking facilities. Senator Gray has introduced a bill in the United States Senate to establish an international American bank, capital, \$5,000,000, shares, \$100. Branch banks are to be established in the larger cities of the United States, not more than eight at one time, and in the larger cities of the countries mentioned. This will enable our people to do business with persons residing in these countries as readily as with persons residing in an adjoining town or State.

THE competition of Germany and the United States with Great Britain, in the hardware trades, is causing some grave anxiety on the other side of the Atlantic. There was a time, and there is not much moss grown on the date yet, when the conditions were reversed. Great Britain had at that time a practical monopoly of the hardware manufacturing industries. Since then it has lost its eminence. Some of this is no doubt due to competition in prices, but it would not be a mile from the truth to assume that by a superior technical education and by greater artistic skill the reversal of business has been brought about. In the hardware industries as in all others the demand for special skill is increasing. Where this is conspicuous, quality counts for more than tonnage in the growth of trade.

THE present century has been an age of bridges. The necessity of easy and swift communication has been more urgent and pressing than ever, and engineering science has kept pace in its daring and skill with the requirements of the times. In the heavy cost of modern bridges we have an idea of their importance and necessity. The Furth Bridge had a bill of expenses amounting to \$14,000,000; the Victoria Bridge, \$12,000,000; the London Bridge, \$10,000,000, and the Brooklyn Bridge has rolled up a total of over \$17,000,000. The list might be indefinitely extended, but in the instances quoted we see enough of the slate of costs to demonstrate the enormous expenditure of money in modern bridge building.

Photo-reduced Specimen Page from Catalogue.



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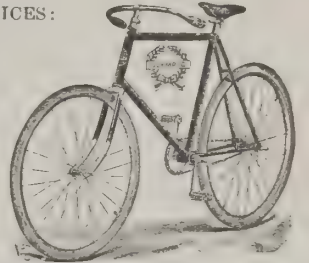
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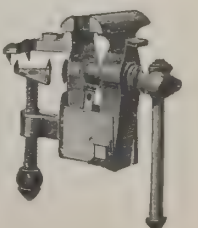
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FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry) ..	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2,854 1/8 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	2 1/4 inches.
Arobe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1.011 pounds.	do.....	Uruguay (double) ..	7.776 bushels.	do.....	China, Japan and Sumatra.	133 1/2 pounds.
Arroba (dry)...	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands (hemp).	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	Fanega (liquid)	Spain.....	16 gallons.	do.....	Philippine Islands (sugar).	140 pounds.
do.....	Portugal.....	32.38 pounds.	Feddan.....	Egypt.....	1.03 acres.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Spain.....	25.36 pounds.	Frail (raisins) ..	Spain.....	50 pounds.	do.....	Castilian.....	0.91407 foot.
do.....	Venezuela.....	25.4024 pounds.	Frasco.....	Argentine Republic	2.5096 quarts.	Pik.....	Turkey.....	27.9 inches.
Arroba (liquid).	Cuba, Spain and Venezuela.	4.263 gallons.	do.....	Mexico.....	2.5 quarts.	Pood.....	Russia.....	36.112 pounds.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	Pund (pound).	Denmark, Sweden...	1.102 pounds.
Arshine (square).	do.....	5.44 square feet.	Garnice.....	Russian Poland ..	0.88 gallon.	Quarter.....	Great Britain.....	8.252 bushels.
Artel.....	Morocco.....	1 1/2 pounds.	Gram.....	Metric.....	15.432 grains.	do.....	London (coal) ..	36 bushels.
Baril.....	Argentine Republic and Mexico.	20.0787 gallons.	Hectare.....	do.....	2.471 acres.	Quintal.....	Argentine Republic	101.42 pounds.
Barrel.....	Malta (customs) ..	11.4 gallons.	Dry.....	do.....	2.838 bushels.	do.....	Brazil.....	130.06 pounds.
do.....	Spain (raisins) ..	100 pounds.	Liquid.....	do.....	26.417 gallons.	do.....	Castile, Chile, Mex- ico and Peru.	101.61 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Joch.....	Austria-Hungary ..	1.422 acres.	do.....	Greece.....	123.2 pounds.
Bongkal.....	India.....	832 grains.	Ken.....	Japan.....	4 yards.	do.....	Newfoundland (fish)	112 pounds.
Bonw.....	Sumatra.....	7,066.5 square metres.	Kilogram (kilo)	Metric.....	2.2046 pounds.	do.....	Paraguay.....	100 pounds.
Bu.....	Japan.....	0.1 inch.	Kilometre.....	do.....	0.621376 mile.	do.....	Syria.....	125 pounds.
Butt (wine)...	Spain.....	140 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Metric.....	220.46 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Kota.....	Japan.....	5.13 bushels.	do.....	Palestine.....	6 pounds.
Candy.....	India (Bombay) ..	529 pounds.	Korree.....	Russia.....	3.5 bushels.	do.....	Syria.....	5 1/2 pounds.
do.....	India (Madras) ..	500 pounds.	Last.....	Belgium, Holland ..	85.134 bushels.	Rottle.....	Russia.....	7 feet.
Cantar.....	Morocco.....	113 pounds.	do.....	England (dry malt) ..	82.52 bushels.	do.....	Malta.....	490 pounds.
do.....	Syria (Damascus) ..	575 pounds.	do.....	Germany.....	2 metric tons (4,480 pounds.)	Sagen.....	Japan.....	3.6 feet.
do.....	Turkey.....	124.7036 pounds.	do.....	Prussia.....	112.29 bushels.	Salm.....	India.....	1 pound 13 ounces.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Russian Poland ..	11 1/2 bushels.	Se.....	Japan.....	10 inches.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Spain (salt).....	4.760 pounds.	Seer.....	do.....	1.6 quarts.
Catty.....	China.....	1.333 1/3 (1 1/3) pounds.	League (land) ..	Paraguay.....	4.633 acres.	Shaku.....	Lumber measure...	165 cubic feet.
do.....	Japan.....	1.31 pounds.	Li.....	China.....	2.115 feet.	Sho.....	British.....	14 pounds.
do.....	Java, Siam, Malacca	1.35 pounds.	Libra (pound) ..	Castilian.....	7.100 grains (troy).	Standard (St. Petersburg) ..	Uruguay.....	2,700 cuadras (see cua- dra).
do.....	Sumatra.....	2.12 pounds.	do.....	Argentine Republic	1.0127 pounds.	Stone.....	Cochin China.....	590.75 grains (troy).
Centaro.....	Central America.	4.2631 gallons.	do.....	Central America.	1.043 pounds.	Suerte.....	Japan.....	0.25 acre.
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Chile.....	1.014 pounds.	Tael.....	do.....	2 pecks.
do.....	Darmstadt.....	110.24 pounds.	do.....	Cuba.....	1.0161 pounds.	Tan.....	Space measure ..	40 cubic feet.
do.....	Denmark, Norway ..	110.11 pounds.	do.....	Mexico.....	1.01465 pounds	To.....	Denmark.....	3.94783 bushels.
do.....	Nuremberg.....	112.43 pounds.	do.....	Peru.....	1.0143 pounds.	Ton.....	do.....	1.36 acres.
do.....	Prussia.....	113.44 pounds.	do.....	Portugal.....	1.011 pounds.	Tonde (cereals)	Japan.....	6 feet square.
do.....	Sweden.....	93.7 pounds.	do.....	Uruguay.....	1.0143 pounds.	Tondeland.....	China.....	1.41 inches.
do.....	Vienna.....	123.5 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tsubo.....	Sweden.....	4.5 bushels.
do.....	Zollverein.....	110.24 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tsun.....	do.....	1.22 acres.
Chih.....	China.....	14 inches.	do.....	Greece.....	1.1 pounds.	Tunna.....	Argentine Republic	34.1208 inches.
Coyan.....	Sarawak.....	3.098 pounds.	do.....	Guiana.....	1.0791 pounds.	Tunnland.....	Castile.....	0.91417 yard.
do.....	Siam (Koyan) ..	2.467 pounds.	Load.....	England (timber) ..	Square, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	do.....	Central America...	38.874 inches.
Cuadra.....	Argentine Republic	4.2 acres.	Manzana.....	Costa Rica.....	1 1/2 acres.	do.....	Chile and Peru...	33.367 inches.
do.....	Paraguay.....	78.9 yards.	Marc.....	Bolivia.....	0.507 pound.	do.....	Cuba.....	33.384 inches.
do.....	Paraguay (square) ..	8.077 square feet.	Maund.....	India.....	823 pounds.	do.....	Curaçao.....	33.375 inches.
do.....	Uruguay.....	Nearly 2 acres.	Metre.....	Metric.....	39.37 inches.	do.....	Mexico.....	33 inches.
Cubic metre....	Metric.....	35.3 cubic feet.	Mil.....	Denmark.....	4.68 miles.	do.....	Paraguay.....	34 inches.
Cwt. (hundred- weight).....	British.....	112 pounds.	do.....	Denmark (geograph- ical).....	4.61 miles.	do.....	Venezuela.....	33.384 inches.
Dessiatine.....	Russia.....	2.6997 acres.	Morgen.....	Prussia.....	0.63 acre.	Vedro.....	Russia.....	2.707 gallons.
do.....	Spain.....	1.589 bushels.	Oke.....	Egypt.....	2.7225 pounds.	Verges.....	Isle of Jersey.....	71.1 square rods.
Drachme.....	Greece.....	Half ounce.	do.....	Greece.....	2.84 pounds.	Verst.....	Russia.....	0.663 mile.
Dun.....	Japan.....	1 inch.	do.....	Hungary.....	3.0817 pounds.	Vlocka.....	Russian Poland....	41.98 acres.
Egyptian wts. and measures.	(See CONSULAR RE- PORTS No. 144.)							
Fanega (dry)...	Central America ..	1.5745 bushels.						

Metric weights.
Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes-ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.
Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.
Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.
Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.
Metre equals 39.37 inches.
Decametre (10 metres) equals 393.7 inches.
Hectometre (100 metres) equals 328 feet 1 inch.
Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10 inches).
Myriametre (10,000 metres) equals 6.2137 miles.

Metric surface measures.
Centare (1 square metre) equals 1.550 square inches.
Are (100 square metres) equals 119.6 square yards.
Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.				EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.			
Length.	Surface.	Capacity.	Weight.	Notation.	1 kilometre	0.62137 mile.	1 mile
			Metric ton	1,000,000	1 metre.....	3,280.83 feet.	1 yard.....
			Quintal.....	100,000	1 centimetre ..	0.3937 inch.	1 foot.....
Myriametre.....			Myriagram.....	10,000	1 hectare.....	2.471 acres.	1 inch.....
Kilometre.....			Kilogram.....	1,000	1 are.....	119.6 square yards.	1 square mile.....
Hectometre.....	Hectare.....	Hectolitre.....	Hectogram.....	100	1 metric ton ..	2,204.62 pounds.	1 acre.....
Decametre.....	Decare.....	Decalitre.....	Decagram.....	10	1 kilogram.....	2.20462 pounds.	1 square foot.....
METRE.	ARE.	LITRE.	GRAM.	1	1 gram.....	15.43236 grains.	1 pound.....
Decimetre.....		Decilitre.....	Decigram.....	0.1	1 hectolitre.....	2.8377 bushels.	1 grain.....
Centimetre.....	Centiare.....	Centilitre.....	Centigram.....	0.01	1 hectolitre.....	26.417 gallons.	1 bushel.....
Millimetre.....		Millilitre.....	Milligram.....	0.001	1 litre.....	1.0567 quarts.	1 gallon.....
					1 stere.....	1.308 cubic yards.	1 cubic foot.....

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.	Square centimetres $\div 6.451$ = sq. inches.	Litres $\div 28.316$ = cubic feet.	Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Millimetres $\div 25.4$ = inches.	Square metres $\times 10.764$ = sq. feet.	Hectolitres $\times 3.531$ = cubic feet.	Kilogram-metres $\times 7.233$ = foot lbs.
Centimetres $\times 0.3937$ = inches.	Square kilometres $\times 247.1$ = acres.	Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)	Kilo per metre $\times 0.672$ = lbs. per foot.
Centimetres $\div 2.54$ = inches.	Hectare $\times 2.471$ = acres.	Hectolitres $\times 0.131$ = cubic yards.	Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Metres $\times 39.37$ = inches. (Act Congress.)	Cubic centimetres $\div 16.383$ = cubic inches.	Hectolitres $\div 26.42$ = gallons (231 cu. in.)	Kilo per cheval $\times 2.233$ = lbs. per H. P.
Metres $\times 3.281$ = feet.	Cubic centimetres $\times 3.69$ = fl. drams	Grams $\times 15.432$ = grains. (Act Congress.)	Kilowatts $\times 1.34$ = horse-power.
Metres $\times 1.094$ = yards.	Cubic centimetres $\div 29.57$ = fluid oz. (U. S. P.)	Grams $\div 981$ = dynes.	Watts $\div 746$ = horse-power.
Kilometres $\times 0.621$ = miles.	Cubic metres $\times 35.315$ = cubic feet.	Grams (water) $\div 29.57$ = fluid ounces.	Watts $\div 0.7373$ = foot pounds per second.
Kilometres $\div 1.6093$ = miles.	Cubic metres $\times 1.308$ = cubic yards.	Grams $\div 28.35$ = ounces avoirdupois.	Calorie $\times 3.968$ = B. T. U.
Kilometres $\times 3,280.7$ = feet.	Cubic metres $\times 264.2$ = gallons (231 cu. in.)	Grams per cu. cent. $\div 27.7$ = lbs. per cu. in.	Cheval vapeur $\times 0.9863$ = horse-power.
Square millimetres $\times 0.0155$ = sq. inches.	Litres $\times 61.022$ = cubic in. (Act Congress.)	Joule $\times 0.7373$ = foot pounds.	Centigrade $\times 1.8$ + 32 = degree Fahrenheit.
Square millimetres $\div 645.1$ = sq. inches.	Litres $\times 33.84$ = fluid ounces (U. S. Phar.)	Kilograms $\times 2.2044$ = pounds.	Franc $\times 0.193$ = dollars.
Square centimetres $\times 0.155$ = sq. inches.	Litres $\times 0.2642$ = gallons (231 cu. in.)	Kilograms $\times 35.3$ = ounces avoirdupois.	Gravity Paris = 980.94 centimetres per sec.
	Litres $\div 3.78$ = gallons (231 cu. in.)	Kilograms $\div 1,102.3$ = tons (2,000 lbs.)	

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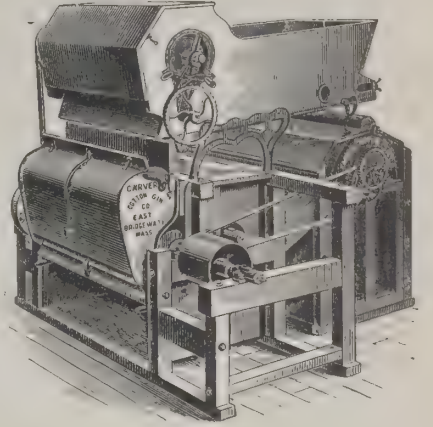
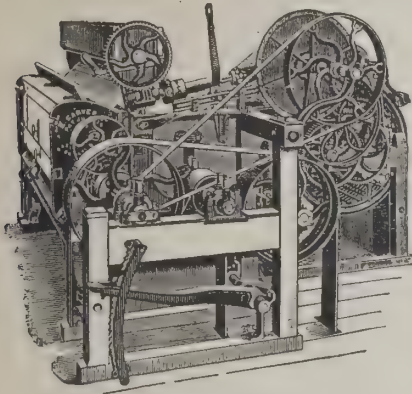
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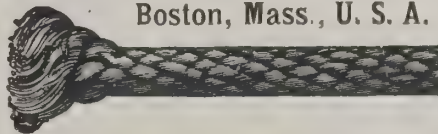
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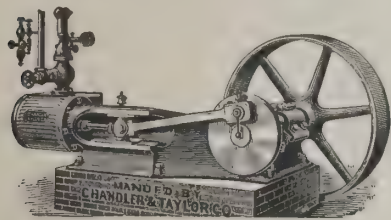
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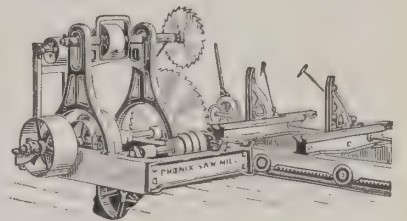
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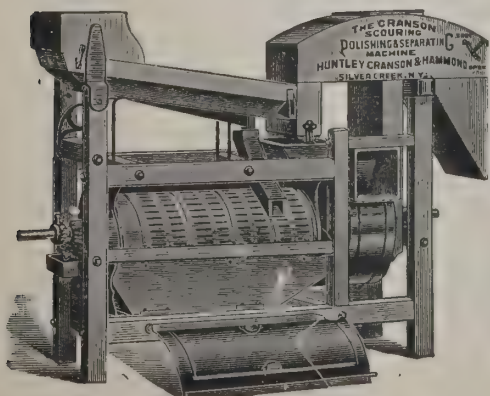
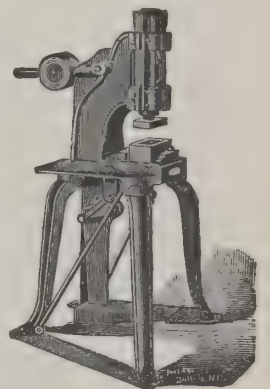
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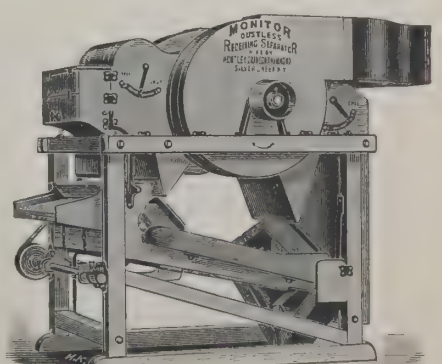
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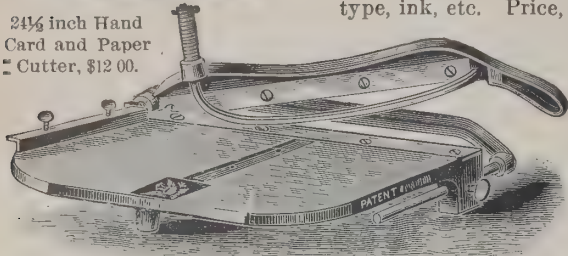
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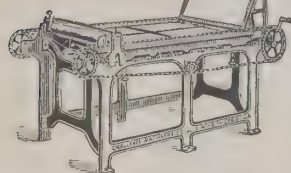


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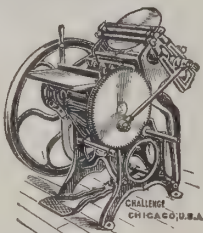
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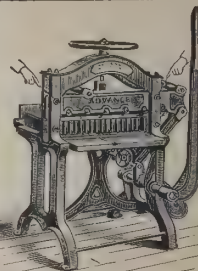
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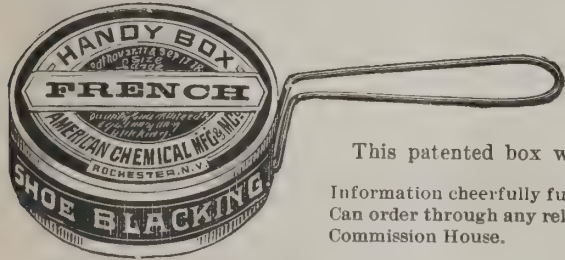
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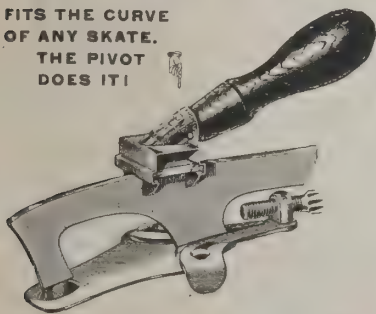
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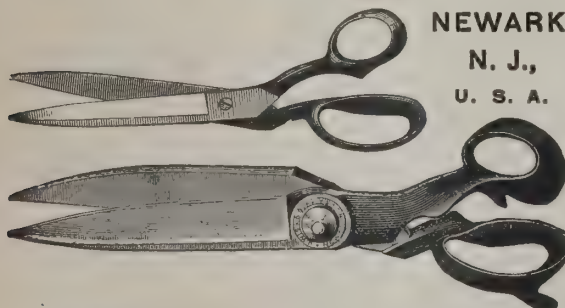
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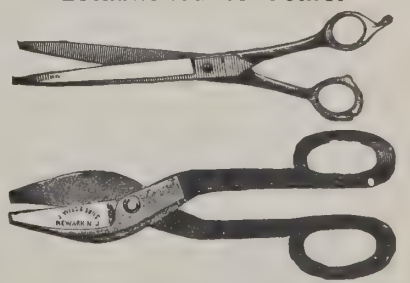
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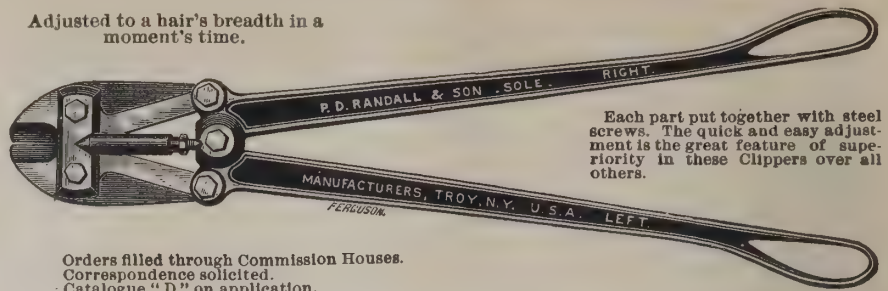
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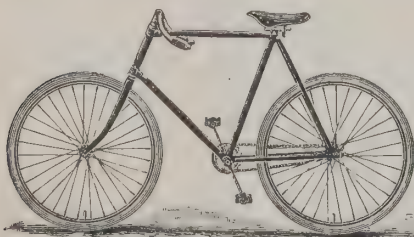
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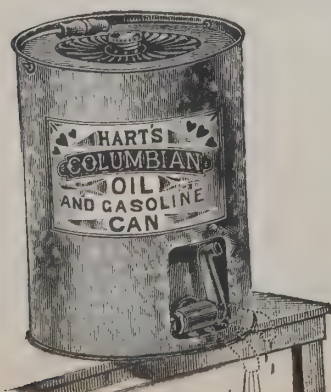
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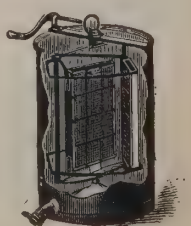
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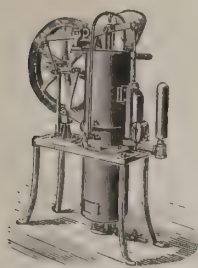
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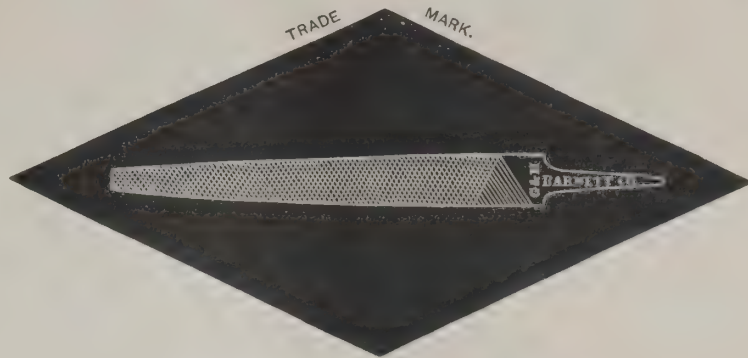
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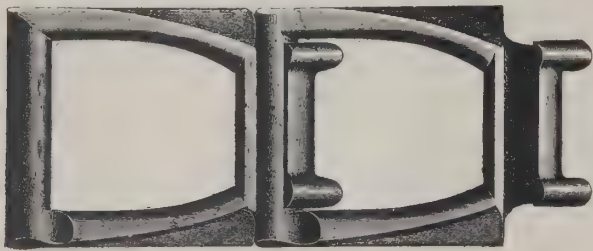
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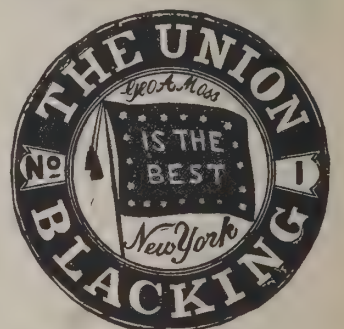


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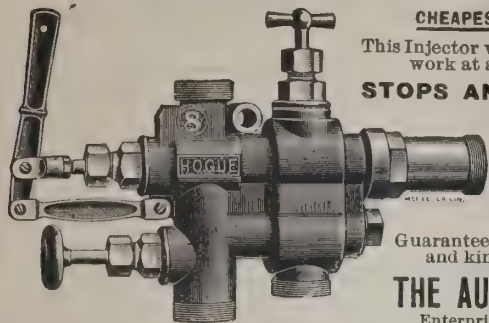
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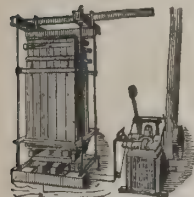
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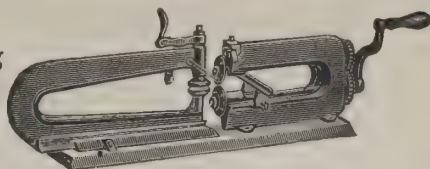
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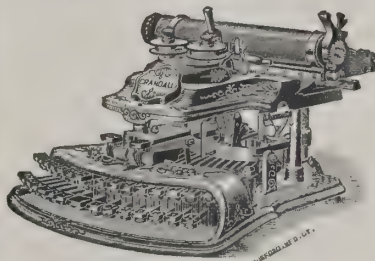
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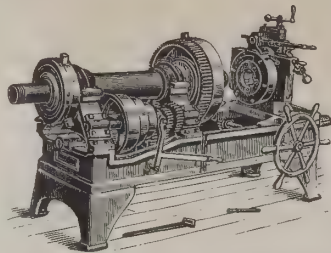
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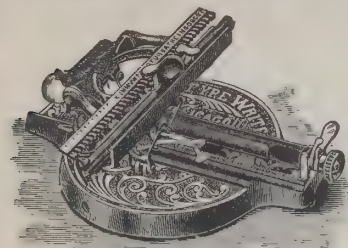
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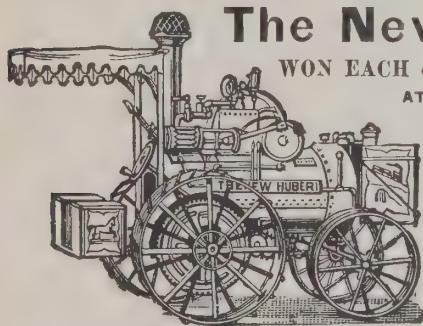
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SIMPLE. Can be used for DURABLE.

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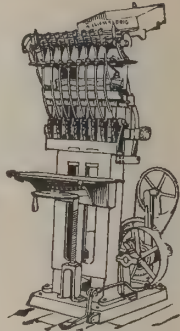
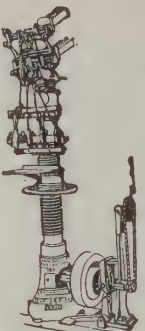
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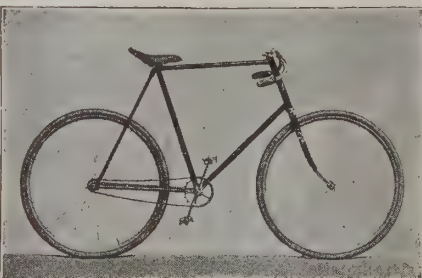
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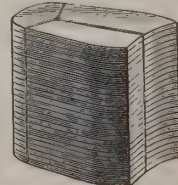
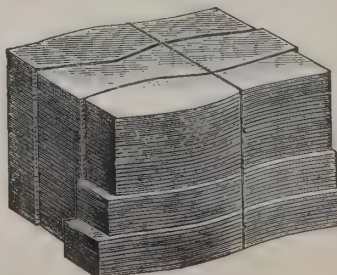
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Thousands of these Stump Pullers
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kinds of stumps, both large and small,
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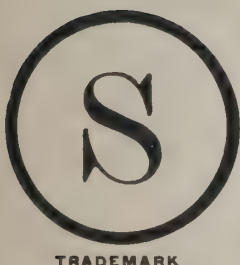
Send for Circular and Price List.

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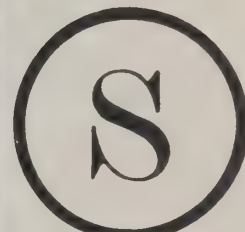
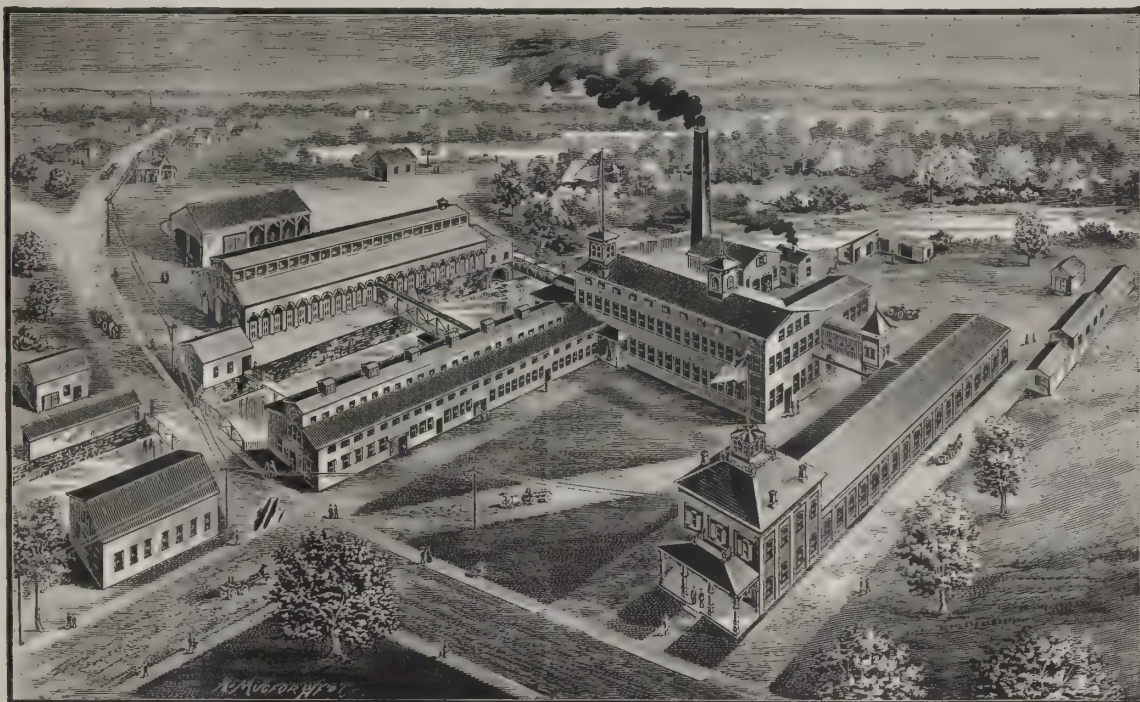
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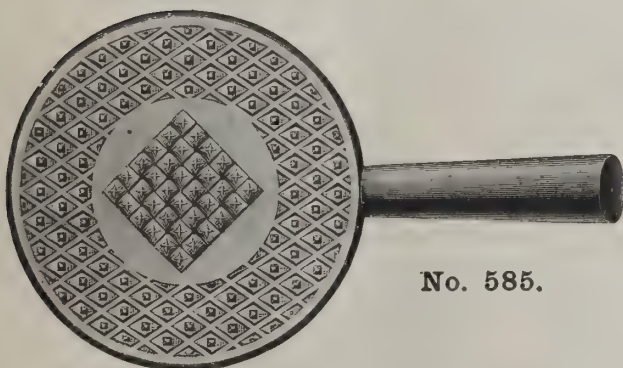


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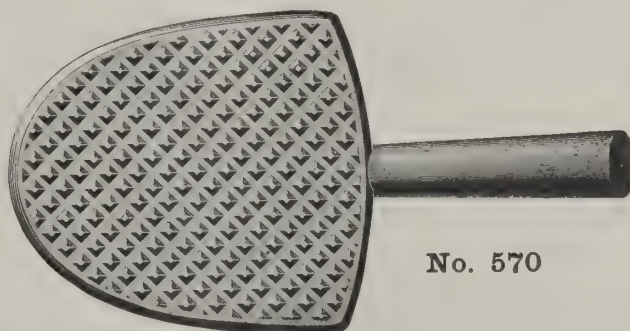


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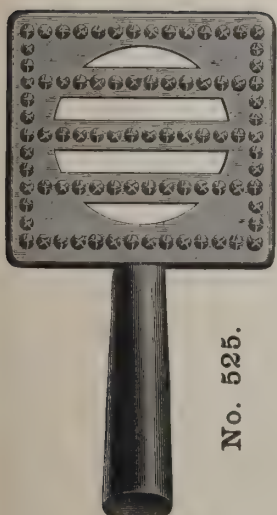
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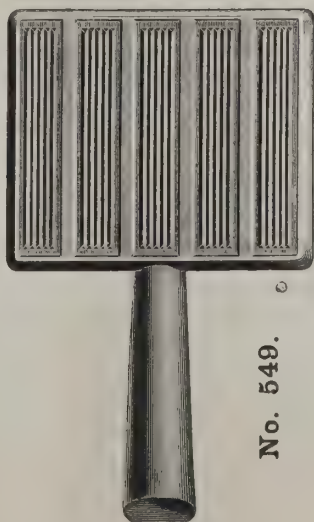
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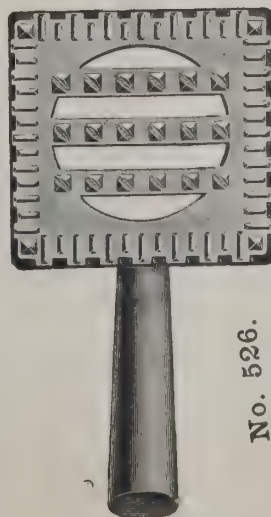
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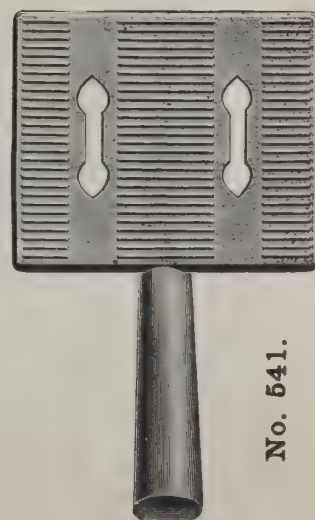
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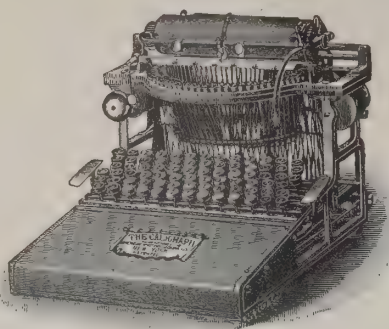
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Add for Child's Seat	3.40
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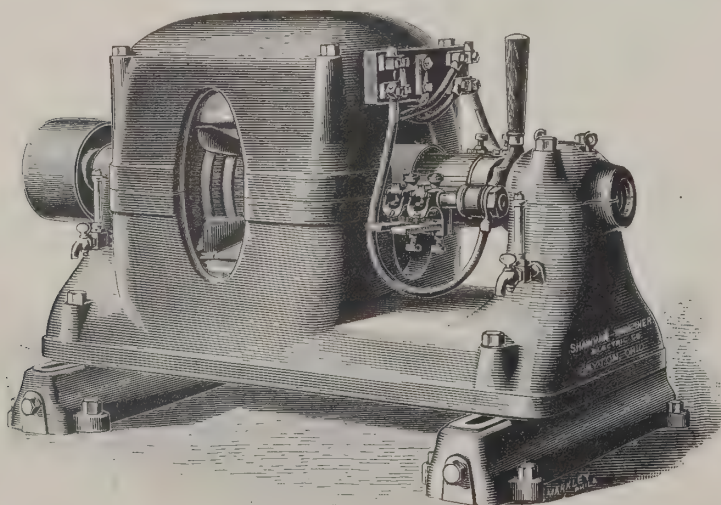
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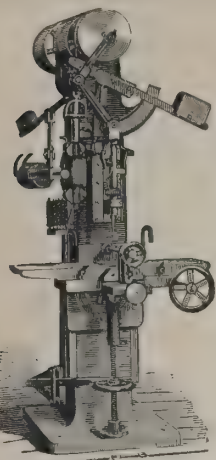
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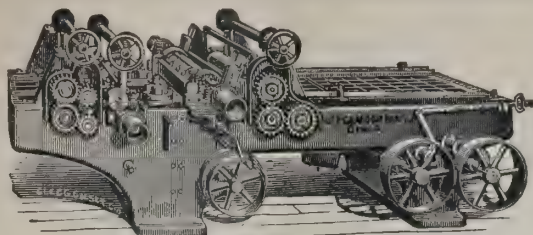
All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

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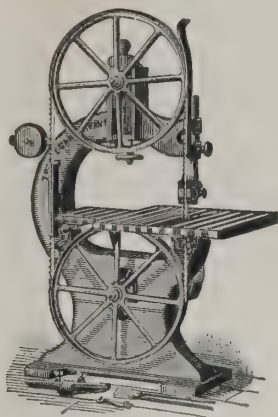


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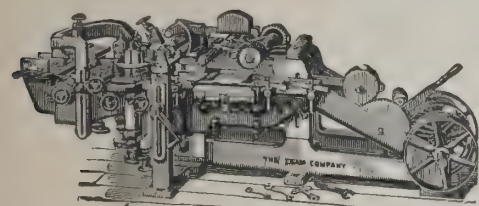


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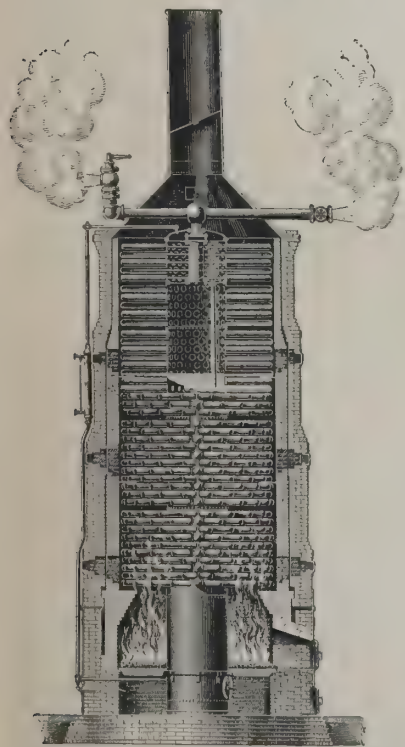
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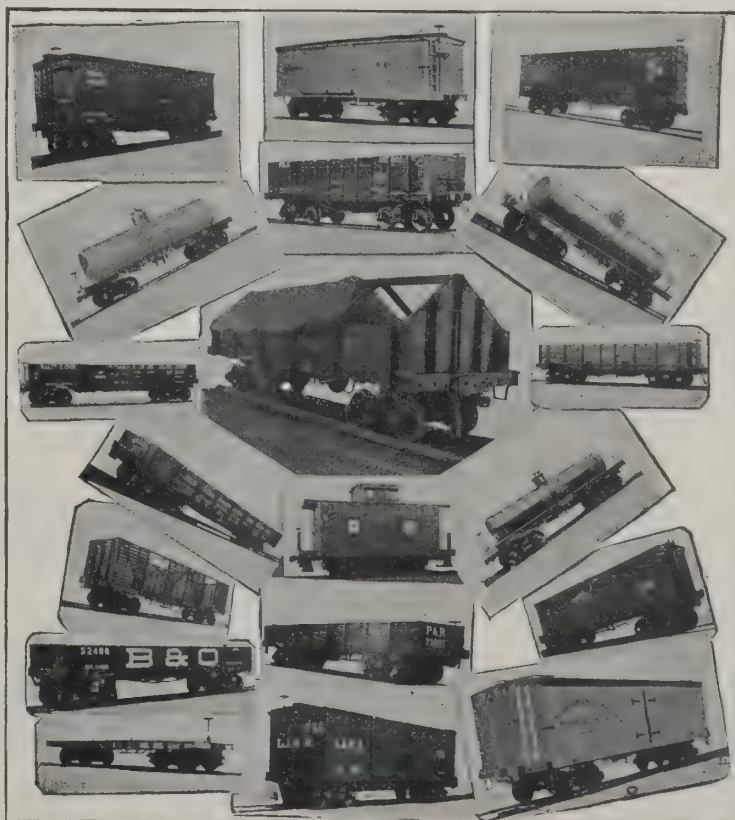
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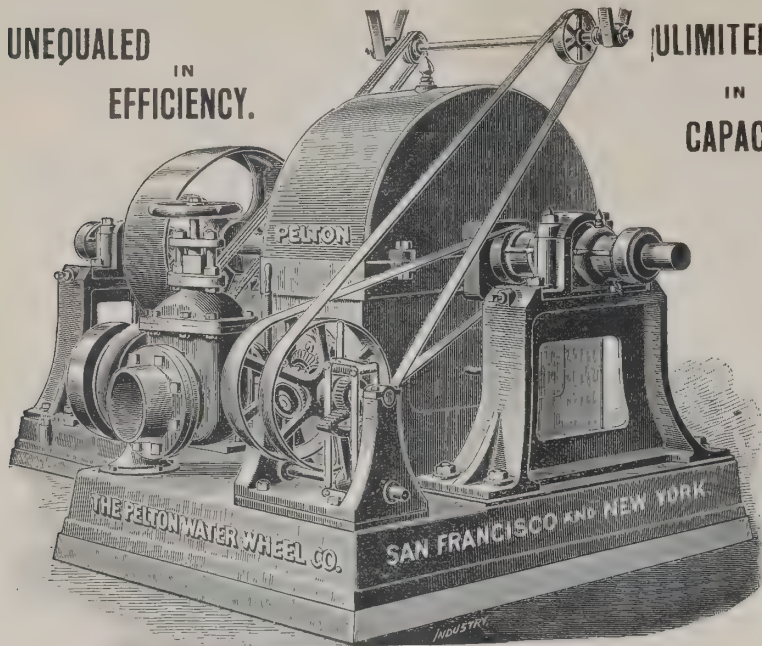
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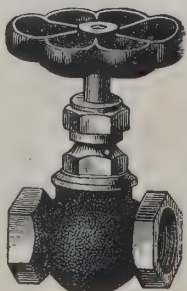
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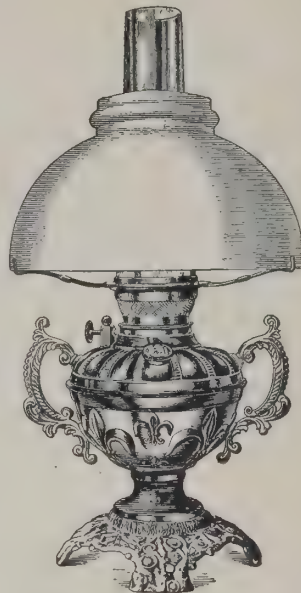
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This Lamp has no Superior in the known world.

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"Pomona" Spray Pump.

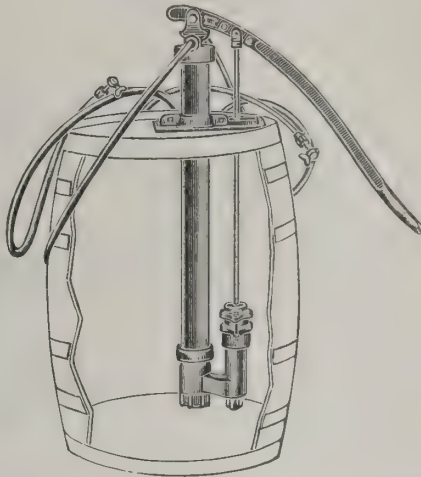


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This pump is simple.

Its working parts are made of brass.

Readily accessible.

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Every dealer should buy the "AMERICAN" Centre Draft Burner, which is in every particular
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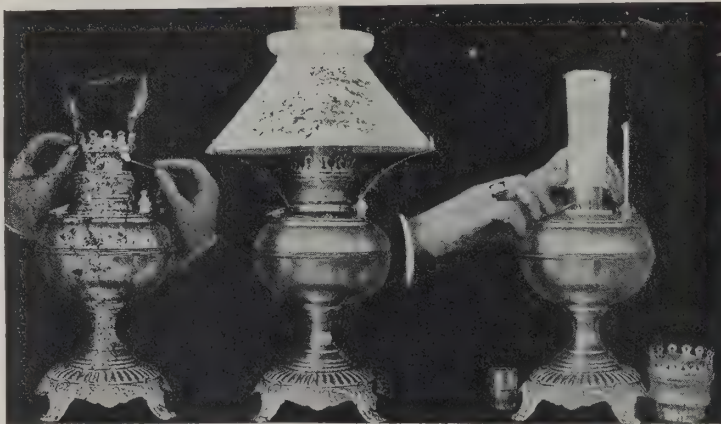
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TO LIGHT.

DON'T HESITATE

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TO REWICK,
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- 4th—Our patented concave burner, containing 1,080 extra large perforated air conductors, results of which make this lamp positively the coolest burning lamp by 40 degrees. This is by actual test.

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- 7th—No dangerous bayonet lock catch, but certainty and security of action in our large double-threaded burner. There is none like unto it, making this absolutely the only safe centre draft lamp.
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- 12th—The last, but not the least, because "The American" received the highest award at the World's Fair, and was thus decided by impartial and expert judges to be the best lamp in the world.

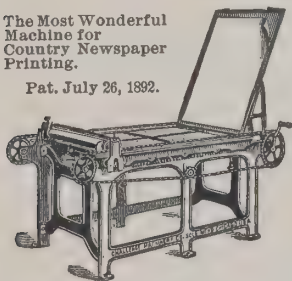
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One Dozen Lamps and Shade Holders in Package, Gross weight, 75 pounds; net weight, 32 pounds; measurement, 13 $\frac{1}{4}$ cubic feet. Price, nickel finish (Lamp and Shade Holder), per dozen, \$11.80 net. Price, Decorated Shades, \$5.50 net. Package charge, 60 cents. Freight prepaid to New York.

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THE AMERICAN EXPORTER.

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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	De Laval Separator Co.—Cream Separators..... 39
American Chemical Mfg. & Mining Co.—Shoe Blacking..... 41	Diago, Frederico C..... —
American Lamp & Brass Co.—Lamps.. 8	Dietz, R. E. Co.—Lamps..... 21
American Writing Machine Co.—Calligraph..... 4	Diamond Hardware Co.—Stove Polishing Mitten..... 31
Armitage-Herschell Co.—Steam Riding Gallery..... 45	Dodd & Williams—Cut Soles and Leather Donegan & Swift—Engines, Injectors, etc..... 47
Ashcroft Mfg. Co. Indicators, Gauges, etc..... 16	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 37
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Doig, W. S.—Box Nailing Machines.... 44
Automatic Injector Co.—Boiler Injectors..... 45	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc.... 23
Ayer, J. C. Co.—Patent Medicines..... 25	Douglas, W. & B.—Pumps, etc..... 7
Ball & Co., Dayton—Shoe Lasts..... 40	Douglass, D. De Forrest—Artificial Limbs..... 45
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Douthitt, J. F.—Tapestry Paintings and Decorations..... 15
Barnett Co., G. & H.—Files..... 39	Eagle Cotton Gin Co.—Cotton Gins.... 31
Barton Mfg. Co.—Rubber Stamp Outfits..... 43	Eco Magnetic Clock Co.—Electric Clocks..... 45
Baxter Register Co.—Cash Registers... 21	Electric Emery Wheel Co..... 45
Baxter, Stoner & Schenkelberger—Cut Soles..... 31	Empire Moulding Works—Mouldings and Frames..... 31
Bay State Cut Sole Co..... 45	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Bignall & Keeler Mfg. Co.—Pipe Threading and Cutting Machines... 44	Falls Rivet & Machine Co.—Pulleys, Shafting, etc..... 33
Blanchard Machine Co.—Disintegrators	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Brewer Longitudinal Axle Lubricator Co..... 41	Faxon & Co.—O. J. Bicycles..... 23
Brown & Co., B. F.—Shoe Dressing.... 42	Flagg Mfg. Co.—Shoe Machinery..... 39
Buffalo Cycle Co.—Bicycles..... 40	Foster Mfg. Co., F. W.—Ball Cocks.... 43
Burgess, Edward A.—Box Nailing and Trimming Machines..... 45	Fraser Mfg. Co.—Manufacturers of Coffee Machinery..... 31
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery.... 45	Fulton Iron Works—Sugar Cane Mills
Carver Cotton Gin Co..... 37	Fulton Stamp Works—Rubber and Metal Stamps, etc..... 44
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 8	Furbush & Son Machine Co., M. A..... 43
Chamberlin Mfg. Co.—Stump Pullers.. 44	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 25
Chandler & Taylor Co.—Steam Engines and Boilers..... 37	Gillie, Goddard & Co.—Carousels... 46
Chicago Metal Stamping Co..... 43	Globe Buffer Co.—Shoe Machinery... 39
Christen & Sons, F.—Bellows..... 43	Goderich Organ Co.—Organs, Stools, etc..... 45
Collins Plow Co.—Plows, Hay and Straw Presses, etc..... 29	Goubert Mfg. Co..... 16
Columbus Phaeton Co..... 4	Gould Packing Co.—Steam and Water Packing..... 23
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 46	Goulds Mfg. Co.—Pumps of all kinds... 7
Crandall Machine Co.—Typewriters... 45	Gout Mfg. Co., David D. A..... 40
Cretors & Co., C.—Peanut Roasters... 46	Grafton Stone Co.—Grindstones..... 48
Crosby Steam Gage and Valve Co.—Safety and Water Valves..... 41	Green Bros.—Watchmakers and Jewelers' Tools and Supplies..... 35
Cunningham Mfg. Co.—Desiccated Egg Food..... 45	Hammer Co.—White Lead F..... 5
Deane Steam Pump Co.—Steam Pumps	Hancock Inspirator Co.—Boiler Feeders
Dederick, P. K. & Co.—Agricultural Implements..... 46	Harrington & King Perforating Co.—Mining Screens..... 25
Densmore Typewriter Co..... 31	Hart Mfg. Co.—Faucet Can..... 40
De la Balze Hermanos..... 43	Hartshorn Co., Stewart—Shade Rollers
De Lamater Iron Works—Hot-Air Pumping Engines..... 42	Hauthaway, C. L. & Sons—Shoe Dressing..... 8
	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 6
	Hazelton Boiler Co..... 5
	Heller & Bros.—Files, Rasps, etc..... 39

PAGE	PAGE
Holmes & Edwards Silver Co.—Spoons and Forks..... 35	Porter, H. K.—Bolt Clippers..... 41
Horrocks Desk Co..... 45	Powell Co., The Wm.—Valves..... 39
Houchin & Huber—Soap and Candle Machinery..... 40	Premier Pen Co.—Fountain Pens..... 31
Huntley Mfg. Co.—Flour Mill Machinery..... 37	Pulver & Sons, Peter—Lubricating Compound..... 25
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 25	Quaker City Electric Co.—Dynamos and Motors..... 40
Irwin Auger Bit Co..... 45	Randall & Son, P. D.—Bolt Clippers... 40
James & Co., George—Soles, Taps, Heels, etc..... 44	Rhyder, W. J.—American Commercial Agency..... —
Jeffrey Mfg. Co.—Detachable Chain Belting..... 43	Root Co., A. I.—Beekeepers' Supplies.. 40
Kalamazoo Railroad Velocipede & Car..... 33	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 33
Kelly Axe Mfg. Co.—Axes..... —	Samson Cordage Works—Cords of all kinds..... 21
Kelsey & Co.—Printing Presses..... 35	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Keystone Mfg. Co.—Agricultural Implements..... 28	Seymour Cutlery Co., Henry—Shears and Scissors..... —
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Schack, W. G.—Bicycles..... 44
Leffel, Jas. & Co.—Water Wheels and Steam Engines..... 42	Schamandjian, D..... —
Marston & Co., J. M.—Foot and Hand Power Saws..... 39	Schollhorn Co., Wm.—Shears and Scissors..... 23
Martin & Co., W. E.—Shoe Dressing... 45	Schrader's Son, A.—Diving Apparatus. 45
Mast, Foss & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 7	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
McCammon Piano Co..... 21	Silver Lake Co.—Braided Cordage..... 37
McGarigle, Thos. E.—Rock Drills..... 46	Simonds Mfg. Co.—Saws..... 39
Milton Car Works—All kinds of Freight Cars..... 5	Slatington-Bangor Slate Syndicate—Roof Slate..... 45
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Smith & Co., H. D.—Carriage Hardware. 3
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 43	Standard Hammock Mills..... 46
Myers, S. F. & Co.—Jewelry of all kinds 35	Standard Radiator Co..... 41
National Meter Co.—Water Meters..... 19	Standard Tool Co.—Twist Drills, etc... 23
National Starch Mfg. Co.—Maizena.... 29	Stanley Works, The—Brackets..... 21
New Jersey Car Spring & Rubber Co... 44	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 7
New Jersey Paint Works—Copper Paint, etc..... 25	Storm Mfg. Co.—Dumb Waiters, etc... 23
New Process Twist Drill Co..... 23	Stubbs' Mercantile Agency..... —
New York City Peanut Roaster Works	Sturtevant Co., B. F.—Pressure Blowers 47
New York Metal Ceiling Co.—Metal Ceilings..... 43	Talcot & Co., W. E.—Brick Machinery 46
Niagara Stamping and Tool Co.—Tools and Machinery for Tinsmiths and Sheet Metal Workers..... 45	Tanite Co., The—Emery Wheels, Whetstones, etc..... 45
Nicholson File Co.—Files..... 21	Tarr, James H.—Copper Paint..... 42
Norman & Evans—Steam Merry-go-rounds..... 45	Thomas & Co., T. B.—Hammocks..... 47
Oberne & Co., Geo.—Leather Supplies.. 46	Thomson Meter Co.—Water Meters.... 48
Odell Typewriter Co.—Typewriters... 44	Thresher Electric Co.—Electrical Machinery..... 4
Osborne & Co., C. S.—Saddle and Harness Tools..... 46	Tubular Rivet & Stud Co..... 33
Pairpoint Mfg. Co.—Silver Plated Ware 2	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 21
Patrick & Carter Co.—Electrical Supplies..... 44	Union Sand Paper & Emery Wheel Co.. 40
Pedrick & Ayer Co.—Machinery..... 16	U. S. Buggy & Cart Co.—Wagons and Carriages..... 39
Pelton Water Wheel Co..... 6	U. S. Playing Card Co..... 2
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	Vetter, F.—Typewriter Desks, etc.... 44
Pike Mfg. Co.—Oil, Scythe, Razor Stones, etc..... 48	Wagen, John F.—Importer..... 41
Plume & Atwood Mfg. Co.—Lamps.... 6	Walker & Pratt Mfg. Co.—Steam Kettles
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 42	Waterbury Watch Co.—Watches of all Grades..... —
	Waterous Engine Works Co.—Saw Mill Machinery..... 19
	Weston Electrical Instrument Co.—Electrometers..... 43
	Whittemore Bros. & Co.—French and Patent Leather Polish..... 6
	Wiss & Sons, J.—Shears and Scissors... 41
	Wood & Paige—Incubators..... 31
	Woodsum Co., B. H.—Tacks and Nails. 23
	Woolsey Paint and Color Co., C. A.—Paints, Colors, Kalsomines, etc.... 42
	Wyckoff, Seamans & Benedict—Remington Typewriter..... 2

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to originate trade, and not to execute orders, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

It does not take goods in exchange for advertising space.

It does not employ the purchasing power of commission merchants and shippers to influence patronage.

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We desire it distinctly understood by our customers and those who contemplate making use of our publications, THE AMERICAN EXPORTER and EL EXPORTADOR AMERICANO, that space in these journals for advertising purposes is sold only upon the merits of the publications—for that purpose. For this reason, no advertising solicitor or agency has any right, or authority, to agree to perform any special service whatever to obtain orders for advertising.

We make it a practice not to discuss the merits or demerits of other export trade papers. Comments on their value may be made with more propriety by those advertisers who have had experience in the use of such publications.

THE JOHN C. COCHRAN CO.

"WHAT IS A DOLLAR?" THE QUESTION ANSWERED.

THIS question has been asked as though there could be a doubt as to what answer, sustained by authority of law, can be given to it.

ONE DOLLAR.

July 6, 1785, a resolution on coinage was adopted by the Continental Congress adopting the decimal system of accounting and declaring one dollar to be the unit of monetary arithmetic.

April 2, 1792, a law was enacted establishing a United States mint, one provision of which declares that money accounting shall be by the decimal system, of which one dollar is the unit. No subsequent legislation has changed this provision of the law, therefore one dollar is the legal unit of the money of account.

VALUE OF ONE DOLLAR.

April 2, 1792, the first coinage act after the adoption of the United States Constitution, declares that a ten-dollar gold piece, equal to the value of ten units, shall contain 247.5 grains of pure gold; a one-dollar silver piece, or unit of value, shall contain 371.25 grains of pure silver, and that the ratio of value between gold and silver shall be 1 to 15.

The value of one dollar under this act was 24.75 grains of pure gold, or 371.25 grains of pure silver when equal in value with 24.75 grains of pure gold.

February 12, 1873, a law was enacted revising the coinage laws, in which the coinage of silver dollars is not provided for, and declares that one dollar shall contain 25.8 grains, fineness 900, of gold and that such dollar shall be the unit of value. This provision of the law has not been changed by subsequent legislation, therefore one dollar is the legal unit of value and the value of the unit is 25.8 grains, fineness 900, of gold.

ALL OBLIGATIONS ARE PAYABLE IN GOLD, OR GOLD VALUES.

September 17, 1789, the Constitution of the United States was adopted containing a provision that contracts, public or private, shall not be impaired by legislative enactments. This provision of the Constitution has not been subsequently changed.

All public and private contracts, expressed in the money of account, use one dollar as the unit of accounting, and the value of this unit since the act of February 12, 1873, is 25.8 grains, fineness 900, of gold, therefore all such public or private obligations are payable in gold at the rate of 25.8 grains, fineness 900, per dollar, or its equivalent in value at the option of the creditor.

Since the United States Constitution prohibits the impairment of contracts by legislative enactment, if Congress should enact a law making 371.25 grains of pure silver the measure of the unit of value, all public and private contracts created prior to its enactment would be payable in gold at the rate of 25.8 grains, fineness 900, per dollar, or its equivalent in value, at the option of the creditor; and all contracts created after its enactment would be payable in silver at the rate of 371.25 grains of pure silver per dollar, or its equivalent in value, at the option of the creditor.

All who favor the free coinage of silver under the impression that such an enactment will permit them to pay obligations with silver, that are expressed in the money of account of which one dollar is the unit of accounting, and 25.8 grains, fineness 900, of gold is the measure of the value of the unit, are mistaken. They will be required to pay their gold obligations in gold and their silver obligations in silver. If they desire to do so they may now make obligations payable in silver at the rate of 371.25 grains of pure silver per dollar. There is no law prohibiting such a contract.

All who suppose there is no law requiring the payment of all public and private obligations, expressed in the money of account, and contracted since February 12, 1873, in gold at the rate of 25.8 grains, fineness 900, per dollar, or its equivalent in value, at the option of the creditor, are mistaken. The only advantage to be gained by writing the words "payable in gold coin" in any such public or private obligation is the ease with which such a specification will satisfy the minds of those not well informed. Its presence or ab-

sence, or the omission of the word "coin" altogether, has no power to change the fact that under the law an obligation expressed in the money of account is payable in gold at the rate of 25.8 grains, fineness 900, per dollar. Congress has no constitutional power to impair contracts by legislative action.

THE ANSWER TO THE QUESTION.

One dollar is the unit of the money of account, act of April 2, 1792. Its value is 25.8 grains, fineness 900, of gold, act of February 12, 1873.

Until these laws are changed this statement will be the only correct answer to the question "What is a dollar?"

MY PRIVATE ADDRESS.—When a person writes: "In future please send THE AMERICAN EXPORTER to my private address, where I have more time to read it," we are pleased with this evidence of appreciation. More to the point, however, is the fact that the careful and deliberate reading of THE AMERICAN EXPORTER by those to whom it is addressed will be for them an exceedingly profitable use of the time so employed. If any one doubts this he can easily prove it to his own satisfaction by giving the course suggested a trial.

A WARNING FOR EXPORTERS TO CUBA.

THE American representative at Havana, Consul-General Williams, calls attention to an order issued by the Intendente-General against the use of vague terms in the bills of lading and manifests of vessels clearing at foreign ports for the island of Cuba. The order states:

"That masters of vessels must not admit bills of merchandise with the words 'hardware,' 'hewed timber,' 'fancy goods,' 'flour' (without expressing place of manufacture) and 'dry goods' (without expressing if of cotton, linen, etc.) and other notoriously vague terms, and that these faults will be punished by fines ranging from \$10 to \$100."

The order is sufficiently clear to cause it to be generally understood. All commodities sent to Cuba should be explicitly listed in manifests, general terms being avoided and specific terms being used, such as "locks," "saws," "cotton" or "linen fabrics," etc. A careful observation of this requirement will avoid trouble and save expense.

AMERICAN CONSULAR SERVICE.

NO prophetic gift is required to show that an efficient consular service must precede the conquest of foreign markets by American products, and that such achievements will result in high appreciation of the service. This will cause the Congress to endow the service with the best possible equipment for holding the markets, once gained. If the service makes itself felt as a helpful factor in creating a foreign demand for American products, it is but the natural outworking of common sense to expect American producers to become all powerful in securing from the Congress any needed regulation or appropriation to develop the service to the highest state of efficiency.

Now that American exports are feeling the effect of a rising trade, United States consuls should exert themselves to enlarge and foster the demand for American products in their respective districts by every means at their command. Evidence of good work done is found in official reports. It is also found in the fact that the work of American consuls is held up as a standard of excellence by competing nations.

Ironmongery, of London, says: "From what we have seen of American consular reports, we judge these to be in too many cases far superior to those with which this country gets supplied. The consuls ought to regularly report fully, not only as to the progress or decrease of British trade in their districts, but as to the reasons for the one or the other; and, in detail, should describe what is best for the several markets with which they are connected. Consular reports are supposed to give this information. Too often it is

a mere supposition." In another issue the same publication says: "What is needed is, we think, a system for the inspection of the whole consular service by commercial experts of sufficiently high standing, position and experience to enable them to occasionally visit each consulate with the view of simplifying and making uniform the methods of business adopted at the different stations and the nature of the reports sent home."

There is nothing in the standard of excellence sought by our English contemporary for the British consular service that cannot be at once realized by the voluntary effort of each American Consul. To win success, however, we must not simply equal our competitors, we must lead them. This will be quickly done if each American consul, after doing all things set forth for his British competitor to accomplish, will make a study of the best manner in which sellers of American products can secure the attention and win the confidence of foreign buyers. After telling American manufacturers what goods *ought* to find a market in his district, the most helpful thing a consul can do is to advise *how* they can find the market by telling them what they should say to buyers or users to induce them to purchase American-made goods. This involves posting American manufacturers on how local prejudices may be overcome and the local understanding of advantage gained from using American-made goods expanded. To realize the best results from this position the consul should tell his principals, the American manufacturers, through the medium of State Department reports, what ought to be sold in his district, and through the medium of *THE AMERICAN EXPORTER*, addressed exclusively to buyers in foreign countries, he should tell the buyers or users in his district why they should buy and use American made products in preference to those originating in any other country. By doing this he will completely satisfy all the requirements of trade, by first telling what to offer and then telling what to say in offering it. It is not necessary to enlarge on this idea. A hint to an American man of affairs is sufficient. Relying upon consuls to lead their British competitors, we will attempt to lead our contemporary, *Ironmongery*, by recommending to our Department of State the system of Consulate inspection demanded by it for the British service and adding to it the suggestion of our own. In addition to a system of inspection there should be devised a plan for compensating every consul or commercial agent, who is now receiving under \$3,000 per year on the basis of the value of American-made products sold in his district each year. This will make the award apply directly to the efficient performance of the service desired. Foreign trade is the thing wanted. This makes the securing of foreign trade the chief interest of American commercial representatives. Five hundred consuls, each adding \$100,000 to the annual sales of American goods in his district, would add \$50,000,000 to our national export sales. For gaining this we can well afford to pay the premium it may be thought judicious to offer.

THE AMERICAN EXPORTER invites expression of opinion or suggestions from United States consuls, for private or public information, in the line of these suggestions.

The United States has the resources, the ability and the capital to become an aggressive and successful competitor in the world's markets. All that its producers need is a guiding influence to assist them in reaching foreign consumers. This must come from the representatives of the Government.

AMERICAN EXPORTS OF MANUFACTURES.

FOR 11 months, ending November 30, exports of American manufactures compared with previous year:

1894.....	\$163,526,650
1895.....	181,901,844

The exports for 1894 were 22.58 per cent., and for 1895 25.36 per cent. of the whole.

The demand for British agricultural machinery from European countries, first 10 months of 1895, fell off about \$1,000,000, while for the same time the demand from the same countries for like goods, American made, increased by the same amount.

COMMERCIAL WAR—GERMANY VS. THE UNITED STATES.

WHEN foreign governments attempt to check American competition, in whatever department it may appear, they will be required to square their actions by the truth, by the force of the intelligent opinion of their own people.

If a government chooses to protect the business of its people in its "home market" by shutting out foreign competition, no one can complain of its action, if it openly avows its purpose and makes no discriminations. It is only when the true reason is disavowed and false reasons are assigned for its regulations, or when unjust discriminations are made, that others have right and reason to complain. Fair play must be insisted upon in domestic or foreign trade.

Shutting a business out of a country on a false pretense is the most dangerous enterprise in which a government can engage. This is especially true if the action is taken against a business originating in the United States.

INSURANCE COMPANIES.

Germany closed its doors against American life insurance companies. Instead of openly avowing its purpose to be the protection of its home companies, it sought to accomplish its purpose by instituting new ordinances and intimating that American companies were not sound. This forces the United States to close its doors against German insurance companies and to prove the soundness of its own institutions.

This may have been expected. Another result is following which was not expected. There are 5,000,000 Germans in the United States whose thrift and prosperity make them liberal patrons of and investors in American insurance companies. They are telling the people in Germany, by thousands of private letters leaving America by every mail, that American insurance companies are sound and well managed. Against such evidence there can be no defense. Putting this and that together, the German insurance companies are now complaining of the new ordinances and are demanding that the administration of insurance affairs shall be made imperial and not a Prussian concern, and at the same time that the system shall be reformed.

AMERICAN CATTLE AND MEATS.

Germany attempted to shut out American cattle and meats, on the plea that they were unwholesome. This statement made it the duty of the United States to defend the world-wide interests of American producers by proving the German pretense false. This has been done. The German officials again overlooked the fact of 5,000,000 Germans in the United States subsisting daily on American food products, and writing continuously to as many millions of their kin in their Fatherland glowing accounts of their good health and prosperity, and the further fact that much of the food supplies proscribed by German officials in Germany were produced by Germans in America. What government can maintain a plea of unwholesomeness against evidence like this? Those who were to be benefited by the plea have done what they could to sustain their officials, but in the intelligent conscience of the German people, at home and abroad, the German Government has lost that prestige of authority which is inspired by the knowledge that it was right.

SUGAR.

Germany has been a century in developing the beet sugar industry, and has encouraged it by paying heavy bounties on its product. The first experiments in beet sugar production in the United States were made only 30 years ago, in a regularly built sugar factory at Chatsworth, Ill. In 1892 the production was only 12,004,838 pounds. In 1894 it was 45,191,256 pounds. Should the United States pay, for 10 years, the same bounty Germany does for beet sugar, its output would supply the world. Its broad acres, virgin soil, the climate of a continent, the energy and intelligence of its people, are equal to the requirement, if so directed.

The German people are now calling for the abolition of the

sugar bounty. They say: "Give Germany cheap sugar and avoid the increase of the surtax by the United States."

GERMANY IN THE WORLD'S MARKETS.

The English are saying: "The rise of Germany as a competitor of this country (England) in the foreign markets is one of the most important economic facts of the last 25 years."

The clearest-sighted German statesmen are warning their people that "the industrial supremacy of the United States must be admitted." They declare that "it is based upon the inexhaustible natural wealth of the country and is enormously developed by the enterprise, technical skill and intelligence of workmen who are less oppressed than the workingmen of Europe. The prosperity of America is growing yearly, and even its steel and iron products are now excelling those of European countries."

In view of such facts, the German Government is being called upon by the representatives of the people to explain the threatened retaliatory measures of the United States against Germany, which, they declare, if carried out will be deplorable.

AN UNEQUAL CONTEST.

The futility of a commercial war on the part of Germany with the United States will be acknowledged when the conditions are rightly comprehended.

Germany has a population of 50,000,000, working on a soil that has been cultivated 1,000 years, and in area only 211,108 square miles.

The United States has a population of 70,000,000, of which 5,000,000, equal to one-tenth of the entire population of Germany, are Germans, and of the best blood Germany has ever produced, working on a soil much of which has not been cultivated 50 years, and in area 3,602,990 square miles.

The pursuit of the vocations of peace should be conducted with honor and amity. German-Americans rank with America's best citizens. Between them and Germans in Germany the social ties are very close. In emulation and honorable dealing each country will find prosperity.

BELOW COST, AT RIDICULOUSLY LOW PRICES.

THE Germans complain that the American lead pencil industry pours its surplus product of thousands of gross upon the market below cost price, and so depresses prices in other countries. With the American pencil the German manufacturers can compete only at a loss, and the trade in cheap markets, such as India, Mexico, Japan and Australia, is as good as lost to him, while the English market has been literally swamped with cheap American pencils at ridiculously low prices.

This complaint contains two statements that are universal in the language of all foreign manufacturers when trying to account for the transfer of orders from them to American manufacturers. They invariably say that American manufacturers place their products on foreign markets "below cost," and, therefore, that their prices are "ridiculously low." In saying this they prove too much. The word "cost," as they use it, means their cost, not the cost to American manufacturers. The foreign cost is sufficient to cover American cost plus a satisfactory profit. In fixing prices below foreign cost the American does not become a dispenser of gratuities in the markets of the world. He simply takes advantage of the law of trade which causes orders to flow to the lowest bidder. He recognizes the mathematical fact that a small percentage of profit on a large aggregate is a much greater sum than a large per cent. on a small output, and makes his figures accordingly. If foreign manufacturers, for their own purposes, are willing to assist him in getting orders by declaring his prices to be "below cost" or "ridiculously low," he will not object. Europe has been teaching the commercial dogma for centuries that people must buy in the cheapest market. This education, plus natural commercial instinct, is a supreme power in controlling the destination of orders. When foreign manufacturers tell buyers that American products are offered "below cost" and at "ridiculously low prices," they should not be surprised when buyers seek to profit by the bargains offered.

GERMANY'S ATTITUDE TOWARD AMERICAN CATTLE AND MEATS.

THE attitude Germany has assumed toward American cattle and meat trade is one of the strangest and most unwarranted anomalies in the history of commerce. It has sought to place and sustain its embargo on the absurd plea that by so doing it was lessening the possibility of disease through the consumption of unwholesome food.

President Cleveland in his message (December, 1895) states the case clearly when he says that the excuses furnished on the plea of more wholesome food are:

"All the more irritating in view of the fact that no European State is as jealous of the excellence and wholesomeness of its exported food supplies as is the United States, nor so easily able, on account of inherent soundness, to guarantee the qualities."

In these days of quick and universal dissemination of information a discrimination against American food supplies on the ground of unwholesomeness will soon relegate those responsible for it to the level of the unenlightened who attempt to scare away the cholera plague by beating tom-toms. In regard to microscopic inspection and discrimination against American meats by European countries the Hon. J. Sterling Morton, Secretary of Agriculture for the United States, says in his report (December, 1895):

"During the fiscal year 1895 45,094,598 pounds of pork were examined microscopically and exported, while during the year 1894 only 35,437,937 pounds went abroad, and in 1893 only 20,677,410 pounds of microscopically examined pork were exported.

"And notwithstanding the agrarian protectionists of Germany, who have instituted by unjust discriminations every possible impediment to the consumption of pork and beef from the United States in that empire, 29,679,410 pounds of microscopically inspected hams, bacon and other cured swine flesh were exported directly to that country; while France, which is intermittently discriminating against us, took 9,203,995 pounds of the same product; Denmark, 472,443; Spain, 4,752, and Italy, 3,630. Indirectly Germany and France probably received much more American bacon and hams than can be estimated from data at hand; but the amounts set down for those two countries were sent directly to German and French ports, and can be verified by the records of the Department of Agriculture.

"Reciprocal certification of the chemical purity of wines exported from those countries to the United States may some time be demanded from the German and French Governments as a sanitary shield to American consumers, for certainly American meats are as wholesome as foreign wines."

It is to be hoped that the Secretary's views as to reciprocal certification will be adopted by our Government.

THE TRUTH AS TOLD BY ENGLISHMEN.

DEPEND upon it, whatever may happen, we are equal to any competition that may be opposed to us, and may look with equal absolute equanimity on the action of any persons who imagine they can beat us in the markets of the world.—LORD SALISBURY.

When Englishmen acknowledge defeat all the world may safely believe the statement. Evidence multiplies that when he uttered the words above quoted, the "Lord of Diplomacy" was not well posted on what the "Lord of Commerce" would say shortly afterwards. It is easy to speak with convincing dictum if one can base his statements on imagination, but it is most unfortunate for the authority of a speaker if his statements do not accord with facts.

With the view of helping English manufacturers meet foreign competition, *Ironmongery*, a London journal published in the interest of the hardware trade, has instituted a series of communications from merchants in the trade to show the causes and extent of successful foreign competition and to present suggestions of ways and means for checking or overcoming the same. It introduces a letter from one of its correspondents in its issue for January, 1896, as follows:

It is the habit of Englishmen to bewail the successful competition of foreign manufacturers, both in the home and foreign markets. The complaints are

based upon very certain grounds, for in many trades it is known how serious of late years has this question become. Men are idle who would still be in profitable employment, if English manufacturers had not been beaten by foreign competitors in the markets, and unfortunately it is a notorious fact that of the stock of the English ironmonger, if he were to take away all that has been made abroad, his shop would look bare indeed. So large a proportion of the goods sold are imported from America, Germany, Belgium and other countries. This is bad enough at home, but the English manufacturers, from similar causes, have a much harder fight in the colonial markets as well than was formerly the case, and in many places they have indisputably lost valuable ground. It is useless to bewail the fact of this presence of so much foreign-made material unless steps are taken to find out the cause and the remedy. The discovery of the cause must precede the remedy. One of our correspondents this month invites the attention of manufacturers to some of the reasons which have forced him to give orders to America when he would have much preferred to give them at home. What has influenced our well-informed correspondent has doubtless influenced thousands of men similarly placed. He is a wholesale furnishing, builders' and general ironmonger in a large and important dockyard town. He understands what he is talking about, for he talks by the book. We give his well-considered letter, hoping and believing that it will lead to a spirited correspondence, for upon this subject retail men can and should give hints to the manufacturers.

The "limits" given have a broader field of usefulness than that for which they were originally designed. Two factors are dealt with, (a) methods of doing business, (b) what people get for their money. If either or both of these have proved sufficient to "force" the writer who "understands what he is talking about, for he talks by the book," to "give orders to America when he would have much preferred to give them at home," they should be equally potent to bring orders to America from buyers of all countries. The statements following are taken verbatim from the letter as published. They are rewritten simply for the purpose of condensation:

"I speak from the standpoint of a retailer who has to buy what the public require, and when they require it.

"I find in ordering goods, say such as files and saws, that an ordinary Sheffield house will take from four to eight weeks to supply. The great competition in saws comes principally from America, and the makers there send out a price list giving full particulars of the saws they stock, and guaranteeing delivery within three days from London. What happens? A customer walks into the shop and requires a saw for a special job. I turn to a list of American saws, and if I find it named, or something that will answer, I sell American in preference to Sheffield makes because I can guarantee delivery. The saw arrives; my customer is pleased and I am satisfied. 'Patriotic' Manufacturer says you should give preference to English makes. So do I, and have tried it. Have ordered from different makers. What result? Customer is annoyed; I lose my profit, for perhaps it comes just in time; is taken in sullen temper and the saw never pleases. This is no exception. During 20 years could prove it of weekly occurrence.

"I issue special lists of goods and make a point of stating that I guarantee prompt delivery. The next item on my list is files. Just at the present time this is a very serious question for Sheffield. I had always thought machine-cut files very inferior, and on the advice of my Sheffield friends religiously stuck to guaranteed hand-cut files. About two years ago I looked at some samples of American files. Rather liked the look of them. They seemed lighter than English files and I was informed they would stand longer and cut better. I took on to the statement, 'We keep good stock and can guarantee prompt delivery.' I ordered a sample; they arrived in a few days; I placed them with a few personal friends to test them. Regarding six horse-rasps, five shoeing smiths declared they were excellent, and now will not use any other; the sixth preferred the English make, and as I keep both I am able to furnish him. Quite 90 per cent. of the files I now sell are American, and my customers prefer them.

"Now for another point—the matter of price lists. The American agent showed me a list that did one good to look at. To begin, a lithograph drawing of a flat bustard file, underneath the list of flat files in all the different lengths and cut, and no other, so you could see at a glance the list of a 14-inch flat bustard, or a 12-inch flat second cut, or a 10-inch smooth, or an 8-inch flat dead smooth, without fearing, as you often do, that you had caught the wrong

column. Other styles all through the list treated in the same manner.

"Such, Mr. Editor, are items of my experience. I really think they are worthy the consideration of any manufacturer who wishes to keep his position. In my next, if I have your permission, I will treat other questions."

We hope permission will be given and that other questions will be treated. One point we desire every buyer, wherever he may be, to keep clearly in mind. By no word in the entire discussion, by editor or correspondent, is the hope suggested that English manufacturers should attempt to outdo the American. Satisfaction would be given if they could be brought up to the point of doing as well. A safe course for buyers to pursue may be illustrated thus: If pieces of money are tendered, one is warranted "as good as gold" and the other is gold, take the gold and leave no room for doubt. If two articles are offered and one is warranted as good as the other, take the one used as the standard of comparison and save the need of a guarantee.

MORE ENGLISH EVIDENCE.

THE Smithfield (England) Agricultural Show attracts foreign and colonial buyers and the export merchants of London, Paris, Antwerp, Hamburg, etc., and there are buyers from South Russia, Hungary and other distant markets who always attend. It is clear, therefore, that at Smithfield the business done is largely on account of the coming year's deliveries, and mostly on export account. Thus, Smithfield has its own peculiar functions, and year by year aids British implement houses in maintaining their foreign and colonial trade. We are compelled to notice that they are not keeping a full and proper grip upon export trade. This is not our statement merely; it is founded upon the official figures given in the Board of trade returns for 11 months, ending November 30, 1895.

Agricultural steam engines, total value exported:

1893.....	£871,735
1894.....	849,347
1895.....	630,788

Agricultural machinery and millwork (other than steam engines), total value exported:

1893.....	£894,937
1894.....	990,906
1895.....	770,157

A decrease occurred in the first item in every market in the world except British East India, and in the last item in every market except those grouped under the heading "Other Countries."

Facts like these require no words of comment.

PRESIDENT CLEVELAND ON COMMERCIAL RETALIATION.

IN his message to Congress (December, 1895) President Cleveland said:

"Our relations with the States of the German Empire are, in some aspects, typical of a condition of things elsewhere found in countries whose productions and trade are similar to our own. The close rivalries of competing industries, the influence of the delusive doctrine that the internal development of a nation is promoted and its wealth increased by a policy which in undertaking to reserve its home markets for the exclusive use of its own producers necessarily obstructs their sales in foreign markets and prevents free access to the products of the world; the desire to retain trade in time-worn ruts regardless of the inexorable laws of new needs and changed conditions of demand and supply, and our own halting tardiness in inviting a freer exchange of commodities, and by this means imperilling our footing in the external markets naturally open to us, have created a situation somewhat injurious to American export interests, not only in Germany, where they are perhaps most noticeable, but in adjacent countries. The exports affected are largely American cattle and other food products, the reason assigned for unfavorable discrimination being that their consumption is deleterious to

the public health. That is all the more irritating in view of the fact that no European State is as jealous of the excellence and wholesomeness of its exported food supplies as the United States, nor so easily able, on account of inherent soundness, to guarantee those qualities.

"It is not to be forgotten that international trade cannot be one-sided. Its currents are alternating and its movements should be honestly reciprocal. Without this it almost necessarily degenerates into a device to gain advantage or a contrivance to secure benefits with only the semblance of a return. In our dealings with other nations we ought to be open-handed and scrupulously fair. This should be our policy as a producing nation, and it plainly becomes us as a people who love generosity and the moral aspects of national good faith and reciprocal forbearance."

CO-ORDINATE INVENTION.

THE occult powers that control the affairs of men do not propose that they shall suffer any more from lost arts. This is evidenced by the fact that every great invention of the age has been revealed to minds far removed from and wholly unknown to each other, practically simultaneously. Notable instances will readily occur to any person well read in mechanical arts. Among them may be mentioned the telegraph, telephone, electric light, both arc and incandescent, sewing machines and processes for treating armor-plate, two patents for which have attracted great attention. One was the invention of Captain Tresidder, of England, the other of the late Mr. Harvey, of the United States. It is a remarkable fact that the original patents for these two inventions were applied for on two consecutive days, Tresidder's application being filed in England one day before Harvey's was filed in the United States, neither party having any knowledge of what the other was doing. The Harvey armor-plate is undoubtedly the armor-plate of the day.

Now comes a new invention, exciting world-wide wonder, the art of photography through opaque bodies. This great discovery has been given to the world by Professor Roentgen, of the Wurzburg University, Germany. No recent discovery has awakened such intense interest. Scientists and experts everywhere have taken it up, almost with delirious enthusiasm, to exploit its possibilities. One reports having photographed the bones in a human hand; another, deposits in the liver and kidneys of a patient. A case is reported from Guy's Hospital, London, of a sailor who has been completely cured of paralysis by this means. A small wound was found in his back by the side of the vertebral column, which healed in a few days, leaving him paralyzed despite all that could be done to avert this calamity. The new photographic discovery was employed. It showed the presence of a foreign body, the nature of which could not be determined, between the first dorsal vertebra and the first lumbar vertebra. An incision was made at this place, and after a great deal of difficulty the blade of a knife was taken out. It is reported that a needle has been extracted in a similar manner from the hand of a child at Berne. A photograph of a fractured leg has been taken in the same town. At Vienna a piece of glass was photographed in a glassworker's hand, where it had been for several years. It is expected that in medicine, surgery and physiology this may be made one of the most productive discoveries of modern times.

Now comes the co-ordinate invention. Professor Roentgen says the credit must be given to M. Menard, the Hungarian scientist, and the *Electrical Engineer*, of New York, makes a claim for Mr. Georges d'Infreville, of this city, in an editorial note, which follows:

PHOTOGRAPHY THROUGH OPAQUE BODIES.

World-wide attention has been aroused by the reports of the work done by Prof. Roentgen in taking photographs electrically of articles screened by solid objects. Mr. Georges d'Infreville, the well-known electrical engineer and inventor, advances what we may perhaps call his claim to priority in this respect, and makes some remarkable statements as to the ability to see electrically in darkness. We are sorry that Mr. d'Infreville is not at liberty to go into further details, but we are constrained to say that he makes no assertion he has not been making, confidentially, for a long time past—to our knowledge, for many months. This seems to be another of those instances where a good many

people are working the same line, and are greatly surprised, even mortified, to learn, from a sudden disclosure, that they have not got the field entirely to themselves. Mr. d'Infreville and others working upon the subject of "phosphotography" and "phosphorescent" or "etheric" lighting in general have our heartiest good wishes for an early fruition of all their hopes and dreams.

Why American Manufacturers Succeed.

[From Our Special London Correspondent]

LONDON, February 1, 1896.

RECENT political events between England and the United States have once again brought into sharp prominence the question of trade relationship between the two countries. If there was one thing more than another which arose in the minds of millions of people during the crisis, it was the question of trade; and how it would suffer in the event of a conflict between the Old World and the New. Events tend to show more and more that as America is independent of England (and Europe) politically, so is she independent of them commercially.

The AMERICAN EXPORTER appeals to readers all over the world, and it is to them that I would state a few pregnant facts to illustrate this commercial supremacy, which, indeed, has long been foretold in this column. Let us take the trade statistics of American exports for the first eight months of 1895 and we find figures which are truly astonishing of America's progress in her export business. The highest value of United States exports of manufactured commodities heretofore reached in one year has been \$184,000,000, but if all things have gone well the past year's export of these commodities will amount to over \$228,000,000. Judging from the statistics already issued this will be the case, the most remarkable gains being in woollen manufactures, chemicals, machinery and refined mineral oils.

I have frequently drawn attention in my correspondence to the growing trade in American agricultural implements, and we find that during the first eight months' trade the gain in the shipments of implements was over \$500,000; in chemicals over \$680,000, and more significant still, over \$1,100,000 in machinery, while in refined oils the value has increased by nearly \$8,000,000. It is possible that the value of the foreign trade for the year will exceed that of the imports by \$17,000,000.

How can we account for this fact? It is inexplicable except on one assumption, and that is, that American manufactures are steadily increasing in favor abroad. The broad fact is that people do not buy what they don't want nor care for, so that American goods must be wanted and liked. Let foreign buyers note this fact. There must be merit in such manufactures that sell so well, and the man that buys what is wanted will succeed.

I remember reading in an American daily paper (the *New York Herald*, I think) the following words: "A new era has evidently dawned upon American manufactures. Every effort should now be made by Americans to sell their products abroad." These words, which are so true, excited much interest in England and in other manufacturing countries in Europe.

I find that in very many foreign centres of trade—especially South Africa and British colonies—the English exporter will not accommodate himself to foreign requirements. He has his ideas of what ought to sell, and he thinks that having made the same sort of goods which his father and grandfather made before him that therefore people ought to buy them and not want anything different. As the London *Engineer* said very rightly a short time ago, "He (the British manufacturer) sets up his standard of rubbish and sticks to it. Take a case. In Canada a type of portable engine is used which has little or nothing in common with the English portable. The English manufacturer calls it rubbish, but those who have used both tells us that the Canadian type, far from being rubbish, is admirably suited to the somewhat peculiar conditions under which thrashing is carried on in Canada. As a matter of fact, in this particular instance it matters nothing what the English maker thinks, because he cannot do a trade in portable engines with Canada because of the tariff, but the facts are no less useful to point our moral." Now this opinion comes from a stanch, but intelligent, leading paper in England itself, and it is commended to the attention of readers of this journal. And the same authority adds warningly: "The United States threatens to build ships for the whole world—and not ships only, but locomotives as well, and to roll rails for humanity in general. The potentialities of the country are enormous." I have repeatedly called attention in this column to the growing trade in American locomotives. They are now to be found in almost all parts of the world and are as general, in their own particular way, as the ubiquitous American typewriting machine, the sewing machine or the American farm implement. And what is true of these manufactures applies generally to the whole series of American goods. And not only to the goods but also to the way in which they are placed on the market and the friendly method of American exporters, in most cases, of meeting the wishes of their foreign customers. It is impossible to "pooh-pooh" this question of American competition with European goods, because behind everything that is said in the way of argument we have the solid fact that American exports are going up by leaps and bounds and that their manufactures sell where those from Europe fail.

AN invention of a wonderful bicycle is reported at Cincinnati as the mechanism of J. A. Ferguson, a Cincinnati machinist. It is said to operate on an entirely new pedal plan. The pedals, instead of describing circles, move vertically. In one revolution of the wheel the foot travels eighteen inches to forty in the ordinary safety. At actual trial the new bicycle made half a mile in thirty-one seconds. Capitalists representing large means are reported as offering to purchase the plan.

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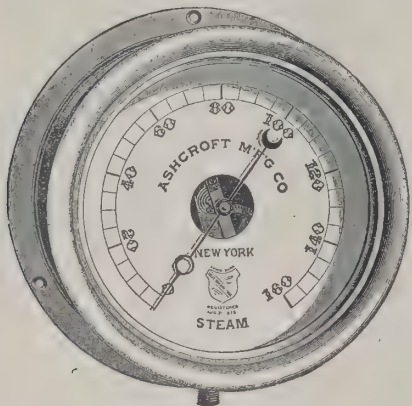
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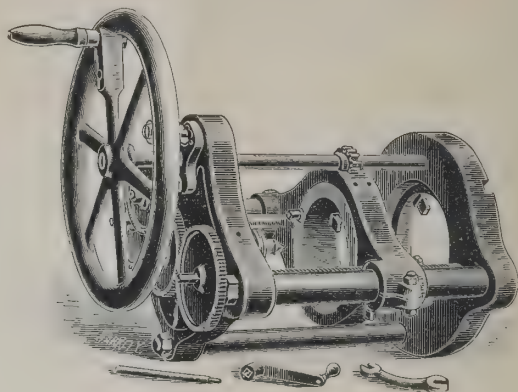
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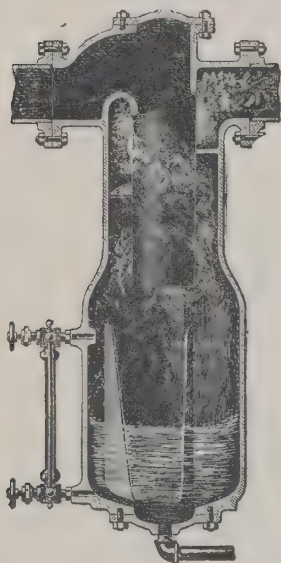
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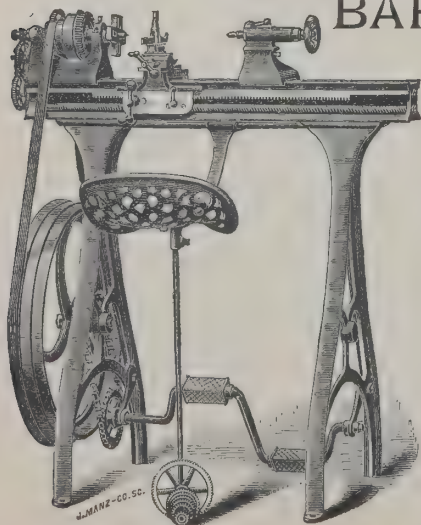
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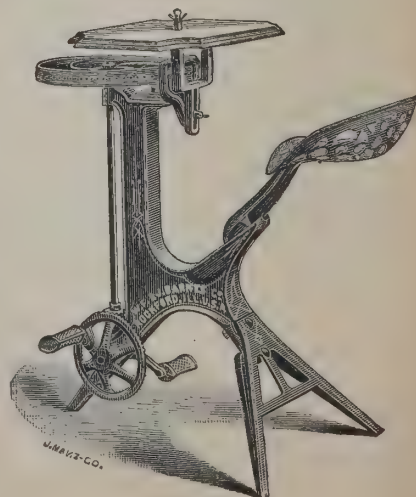
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An English View of American Inventiveness.

AMONGST those qualities with which our American cousins are frequently credited as possessing in fuller measure than is generally enjoyed by the Britisher, the Yankee inventive ingenuity is allowed to be pre-eminent by any one watching the account of its products week by week as they are put on the market or illustrated in the papers devoted to such purposes. In the smaller ways, in hardware, tools and domestic appliances with which we are more concerned, one is tempted to say that the American genius for invention shows at its best and most surprises us. It may be that it seems so to us only because these are the lines which we watch most closely, and we are making no positive statement that the Americans do not also lead in great engineering enterprises as they do in smaller, but no less useful, things. Be that as it may, we are so constantly struck by the ceaseless ingenuity shown in most of the devices for labor-saving in small ways that keep on ceaselessly pouring out from America, that we have resolved from time to time to note some of the more striking ones, not so much in the hope of bursting upon readers with something of which they have never heard before, as in furnishing examples of American versatility in ways of vital interest to the ironmonger. To keep an eye on American inventiveness is a liberal education in what may be done by ingenuity aptly applied. The chief characteristics of this American inventiveness are the directness and simplicity with which it is applied, casting aside the conventional and cumbrous that with us is too often clung to by force of habit. This alertness and fearlessness of the American constructive faculty has revolutionized many departments of the mechanical trades, and its results are worth more attention than is generally accorded to them by this country. Take, for instance, the first article illustrative of this contention that catches our eye in turning over the leaves of an American journal devoted to hardware. In the "Common Sense" self-tilting kettle, perhaps not entirely new to all readers, we have the problem of how not to burn one's fingers when pouring off boiling water solved at one light stroke of this inventive genius. This is accomplished by putting two handles instead of one on any vessel such as a stew-pan, which is furnished with the wire bail from side to side, not the rigid saucepan handle. The two handles are fixed to lugs about an inch apart, one is shorter than the other, and the two are loosely fastened together in the middle so that they cannot separate. To tilt the vessel, then, the shorter handle is held on the fingers while the thumb presses on the longer, and the water may be gradually poured off, the steam rising clear of the fingers. There is a dash of grim humor, from the point of view of the rat, in Davidson's "Cast-iron Cat." It is a rat trap said to be particularly destructive; mounted on the spring to be released by the rat's nibbling, when it will descend and make him captive, is the effigy of a cat rampant done in cast-iron. The cat comes down on the rat together with the spring, and the thief is imprisoned by her iron paws. Just this added touch of realism should sell the trap. A cake pan with removable bottom, which is raised by means of a lever, prevents the breaking of cakes or pastry on removal from the pan. There are no eulogies needed to commend a nerve and temper-saving device of this kind. The "Unique" broiler has a long, hinged handle, which enables the cook to place the article to be broiled directly upon the fire, thereby preserving all the nutriment, and at the same time allowing the smoke and smell to escape up the chimney. And again, an adjustable cover for kitchen utensils is another example of inspired simplicity. A cover of simple construction, with a slot from centre to circumference, can be drawn by manipulation of a wire handle at the top to fit a vessel of any size, so that where it is used the agonies caused by lids lost, stolen or strayed are brought to an end.—*The Hardwareman, London.*

British Jealous of American Boys.

THE Navy Department has been informed that the Royal School of Naval Architecture at Greenwich will hereafter decline to receive any constructors of the United States Navy. No reason for this action is assigned. It is variously supposed here that the British Government wishes to prevent the United States from obtaining knowledge of English shipbuilding plans; that the authorities consider that there is no longer any necessity for extending the courtesy, as equally good training can now be obtained at home, and, finally, that the authorities have become nettled over the success of the American constructors at Greenwich in taking prizes over the heads of British students, as nearly every year a member of the naval construction corps of the United States has taken either first or second prize, and sometimes both of these prizes have been secured by the young Americans.

Edison's New Wonder—Ore-Separating Process.

THOMAS A. EDISON has just brought to a practical conclusion his great ore-separating process, at the mine at Edison, near Ogden, N. J., on which he has been at work for many years. After wrestling with and overcoming obstacles that would have conquered any less persistent experimenter, the process has at last been finished and the great plant is in running order.

The scheme is an interesting one, in that there is no human intervention during the entire process from start to finish. When the cars of ore and rock are dumped in large masses into the crushers that form the first step in the process, the rest of the process is entirely automatic, the crushed rock and ore being carried automatically from one set of crushers to another by means of endless belts and bucket elevators, till the material is reduced to the requisite fineness, and then another series of belts and elevators carry it to the separating house, where the material falls in a fine stream across a field of large electro magnets, which divert the iron from the direct line of fall and drop it into one receptacle, while the refuse and rock fall into another.

This process is repeated a number of times, till at last the resultant product is pure magnetic oxide of iron.

PROCESS PURELY AUTOMATIC.

Automatic carriers take the iron ore thence to the bricking plant, where, by ingenious mechanism, over which the great inventor has spent thousands of dollars in experimentation, the ore is mixed with binding material and pressed into small bricks for convenience in handling. These are then baked and are ready for the market. The sole remaining work of construction yet to be done is the building of the rotary furnaces which shall bake the bricks as they are delivered and turn them out automatically. There are no mechanical or scientific difficulties connected with this part of the process, and these furnaces are to be built as soon as the frost is out of the ground in the Spring.

THE WIZARD REJOICES.

Mr. Edison is jubilant at the final success of his work. Just at present he is experimenting in the lines of electric lighting. He said a day or two ago that he had neglected a number of these matters while finishing up his work at the mine, and that during the next three months he should have some developments to bring out that would work a revolution in some of the processes of electric lighting.

American Mining Machinery.

THE fact is manifesting itself that mining by machinery promises in the future to be, in a great majority of instances, the only mining method in vogue. In this respect the United States leads the world, and our machinery is being exported to all parts of the globe. There is no industry in the United States where the applicability and value of mining machinery is more apparent than it is in connection with coal mining. There are the mining drills; the automatic haulage in mines, the coal cutters, the conveyors, all of which have brought about a saving of time and economy of labor which has enabled the producers to enter into the market upon a basis which otherwise would have been impossible. Of course, all this tends to bring about a revolution in the business conditions which prevailed years ago. From the amount of tonnage that is being mined and disposed of, it is readily seen that the coal producers of the country are keeping pace with the tide of development that is now sweeping over the country. The market must become larger and larger and the opportunities for business relatively greater.

American Electrical Apparatus Excels.

ELECTRIC apparatus manufactured in the United States is sold all over the civilized world, and is to-day a strong competitor in England and on the European continent with European manufactured apparatus. In the street railway field the electric apparatus manufactured by the principal electric companies of the United States surpasses anything of the kind in the world, and has been adopted in competition with European manufacturers in Bordeaux, Brussels, in Italy, in Leeds, England, in Cairo, Egypt, and elsewhere. A recent contract has been secured by an American firm for the electrical equipment of a tannery at Dublin, Ireland. The length of the line is 10 miles, and the plant is interesting in that the power is to be supplied to the lines from sub-stations, which are operated from the main power station on the three-phase system of power transmission, synchronous motors driving the 500-volt railway generators in these sub-stations.

America's World Exposition.

LEADING journals of Europe are discussing the practical utility of World's expositions. There could be no discussion of this subject if the expositions were practical.

America has opened a practical World's exposition to which it invites the peoples of all nations and guarantees a rich reward of useful information and practical results to all who will give it a thorough inspection for business purposes, for information, or for pleasure.

It has been constructed, equipped and is maintained by a daily expenditure far exceeding the combined outlay for all World's expositions ever held, with all smaller ones included.

In variety and quality of objects on exhibit, collected from every quarter of the globe, and from the limitless resources of the United States, the display is so great that no person can examine all in a lifetime, yet their arrangement is so systemized, and the facilities for intercommunication are so complete and inexpensive, that one may find what he most wishes to see with little use of time and small outlay.

For the entertainment of strangers the arrangements are ample and suited to all conditions and nationalities. The expense is just what one chooses to make it, as the wide range from \$3 per week to \$25 per day will indicate.

The rules of the Exposition permit visitors to come and go at any time they choose, day or night, without charge for entrance fee, and they may purchase for immediate or future delivery any article they may desire.

To the *Mail and Express*, of New York, we are indebted for the following items relating to this unsurpassed World's Exposition.

AMERICAN FIRE APPARATUS.

The whole world looks to New York for fire apparatus. It is conceded that this city produces the finest engines, the most beautiful and exquisite hose carriages, and the most convenient and practical ladder trucks. The reason for the success in this particular line is because the manufacturers keep up to the times, and new inventions and devices are constantly being added, to make the equipment of the modern fire fighter of the most effective character.

It is estimated that every year 400 pieces of fire apparatus are shipped from New York, and a large portion of this goes abroad. It is customary for the chiefs of the London and Paris departments to make periodical trips to New York to ascertain what new devices in fire apparatus have been invented and to purchase new apparatus for use in Europe. The chief of the Paris department puts New York at the head of the world in the production of fire apparatus, and Chief Bonner does not dissent from his opinion, but confirms it all the more strongly. The entire plant of the New York Fire Department is the work of a New York firm, and 57 new pieces have been added to the department within the past 10 years.

The hose carriages and the beautiful trucks seen resplendent in brass on parade days and the special hanging harness for quick work are all late inventions of New York firms. The harness which drops over the backs of the horses, and which fastens with a snap, enabling an engine to get out of its house in a minute and a half, are all the results of the study of New York experts, to whom the world is indebted for its improved facilities for fighting fire.

AMERICAN THREAD.

The moist atmosphere of Great Britain, especially that of Scotland, was originally considered to be essential to the manufacture of thread. Since the early sixties, when the industry was first established in this country, American manufacturers have demonstrated that thread can be spun here, and have built up one of the most important and successful industries in the country.

Less than 2 per cent of the thread used in the United States to day is imported. The American product is considered to be quite equal to that of foreign factories; in fact, the American standard makes bring higher price than do the imported products.

American manufacturers have revolutionized the processes of thread making and have inaugurated the most important changes in the trade. The invention of the sewing machine at once summoned the inventive genius of the thread manufacturers to produce a smoother, stronger thread than had before been used. The thread manufactured to-day is lower in price than it has ever been, and the quality is infinitely superior. The genius of the thread men has been turned to improving the article rather than cheapening it.

New York is the great distributing centre for all the mills. In New York are the main agencies, and America is their sole market. Thread agencies in other cities are subject to the New York offices.

CELLULOID PRINTING.

New York celluloid printers have made such a success of their art during the past ten years, and have reached such a high degree of perfection, that they now are the acknowledged leaders of the world in this particular industry. They have surpassed even the Germans, who for many years held the supremacy in this work, and a great deal of the New York product is now shipped abroad, especially the work done from steel plates, which has a more perfect finish and a better color than the work produced abroad.

Every year sees some new idea in the work of the celluloid printers, and in such things as name-labels, bar-labels and finger strips for musical instruments, buttons and badges, game counters, cigar and postage stamp cases, celluloid

delicately printed has superseded metal to a large extent. The name-labels on bicycles are now made of celluloid, which, it has been discovered, can be bent to the proper angle.

Of late celluloid printing has extended to thermometer scales, name plates for use on furniture and for scientific instruments, and for other useful things. Pretty calendars and advertising cards are turned out by the thousands, and this branch of the industry has been a great success.

METAL-WORKING MACHINERY.

"There is no question but that New York is the headquarters for the sale of metal-working machinery," said an expert in this trade. "All the great manufacturers have their headquarters here, and several large firms have their factories in the city. Foreign countries look to New York for their supply, for the reason that they can get machinery more modern in design than is made abroad."

The development in the last few years in this business has been something remarkable, and a member of one of the large firms made the statement that at the present time the firm was doing a business of \$70,000 a month, while not long ago they were doing but \$35,000. The export trade has grown to wonderful proportions. Metal-working machinery from the New York market is sent in great quantities to Germany, England, South America and, in fact, all parts of the world.

New York is the acknowledged headquarters for these goods, and buyers from all parts of the country, and firms which are fitting up factories for the manufacture of all kinds of articles, come to New York before placing their orders.

CHINA, GLASSWARE AND POTTERY.

There is no place in the world where one is apt to find a more elegant and extensive collection of china, glassware and pottery than in New York. Here the great importers draw upon all the markets of Europe, securing all that is best and most beautiful. Then, too, American potteries, which are manufacturing a very high grade of ware, are keeping the New York market well stocked with a profusion of the newest and most beautiful styles. From New York they are distributed west to the Pacific, north to Canada and south to the Gulf.

Manufacturers and importers of pottery have not talked so encouragingly in years. They look forward to a marked improvement in general trade, which will ultimately have its effect on the pottery business by creating a better demand. Consequently all the large New York houses have made extensive preparations to carry large stocks for the ensuing season.

The importing of pottery is increasing steadily because of the increasing wealth of the country, and New York, because of its superior advantages, must continue to be the centre of distribution.

The importing of china and pottery is much greater than its manufacture, but of glass the reverse is true, the amount manufactured being double the amount imported.

One of the most popular demands being made in the pottery business is for high-grade toilet ware. So great is the constantly increasing call for elaborate toilet sets that the market is being taxed to its utmost. There is no place in the world where one is apt to find a more elegant collection of these goods than in New York. Added to a profusion of new and beautiful styles of American manufacture is the best that European markets afford. In all potteries there is a call for finer decorations, and as a result the most elaborate and expensive designs can be seen. The palm is generally conceded to American manufacturers. There is a continued increase in the shipment of table glass to foreign countries from the New York market. It is believed that this is destined to be one of the features of the trade in the near future.

PIANOS AND ORGANS

There are about 85 establishments for the manufacture of pianos in and around New York, representing an investment of \$7,000,000, and affording employment for 20,000 people. In fact, there is no city in the world where there are so many people employed in the manufacture of pianos and where such high wages are paid. In New York are the largest supply houses, furnishing all the parts and materials essential to the construction of the queen of instruments. No other city has such palatial warerooms, and no other city has had such unanimous recognition from foreign musicians and nobility for the excellence of its instruments as has New York.

New York pianos are in universal use, having found their way to the four quarters of the globe. In every art centre they may be found. They have competed against foreign instruments in their own markets, and, without exception, have established their superiority. They stand foreign climates better than foreign instruments stand ours, and they have yet to disprove that New York is the home of the high-grade piano.

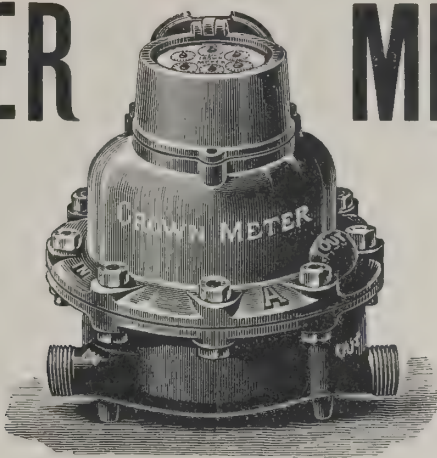
The advances made by Americans in the manufacture of organs have been no less signal than in the manufacture of pianos. England is the great market for American and Canadian organs, and New York is the great distributor. A member of one of the largest organ manufacturing concerns said recently: "The English are intensely fond of church music. No home is considered to be complete unless it has its organ, around which the members of the family can assemble in the early evening and sing sacred hymns. We sell thousands and thousands of organs in England every year. Unlike pianos, they are not affected by extremes of heat and cold. We send them to South Africa, New Zealand and Australia, where they are used principally by English colonists.

As the English trade increases, the American trade decreases. The piano seems to be taking the place of the organ in the American home. There was a time when the organ was considered to be indispensable, but the growing popularity of secular music of livelier measure than the old sacred hymns has given

CROWN, NASH, : GEM : AND : EMPIRE WATER METERS.

156,000

In Actual Service at the Present Time.



156,000

In Actual Service at the Present Time.

YEARS OF EXHAUSTIVE SERVICE IN ALL SECTIONS OF THE GLOBE HAVE DEMONSTRATED THE
ACKNOWLEDGED SUPERIORITY OF OUR METERS.

NATIONAL METER COMPANY,

FEBRUARY, 1896.

298 Broadway, New York, U. S. A.

Lumber Cutting Machinery

OUR SPECIALTY.

Our machinery is practical and well adapted to its work. We have given the export trade special attention for over 20 years, and through the experience thus gained we can furnish machinery that is sure to please.

UNBREAKABLE STEEL SAW CARRIAGES

In Several Sizes.

This cut shows one long seat and set works of a No. 4½ Carriage. Complete Carriage has 3 log seats opening 40 inches from saw.
No. 5 opens 50 inches.
No. 6 opens 60 inches.

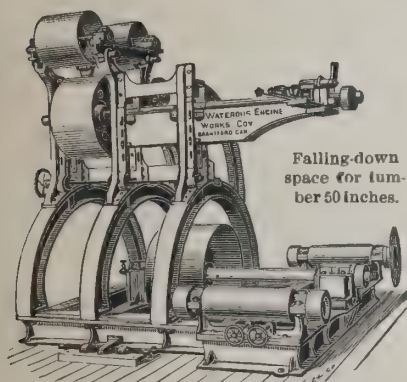


Fig. 33.—No. 4 Saw Frame.

Takes up to 72-inch lower and 40-inch upper
S.A.W.

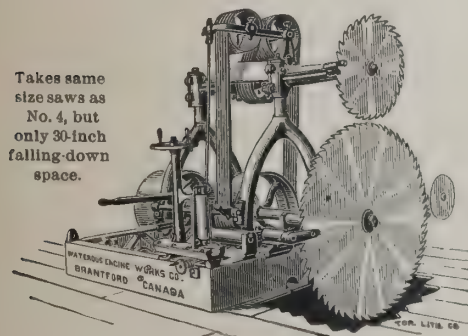
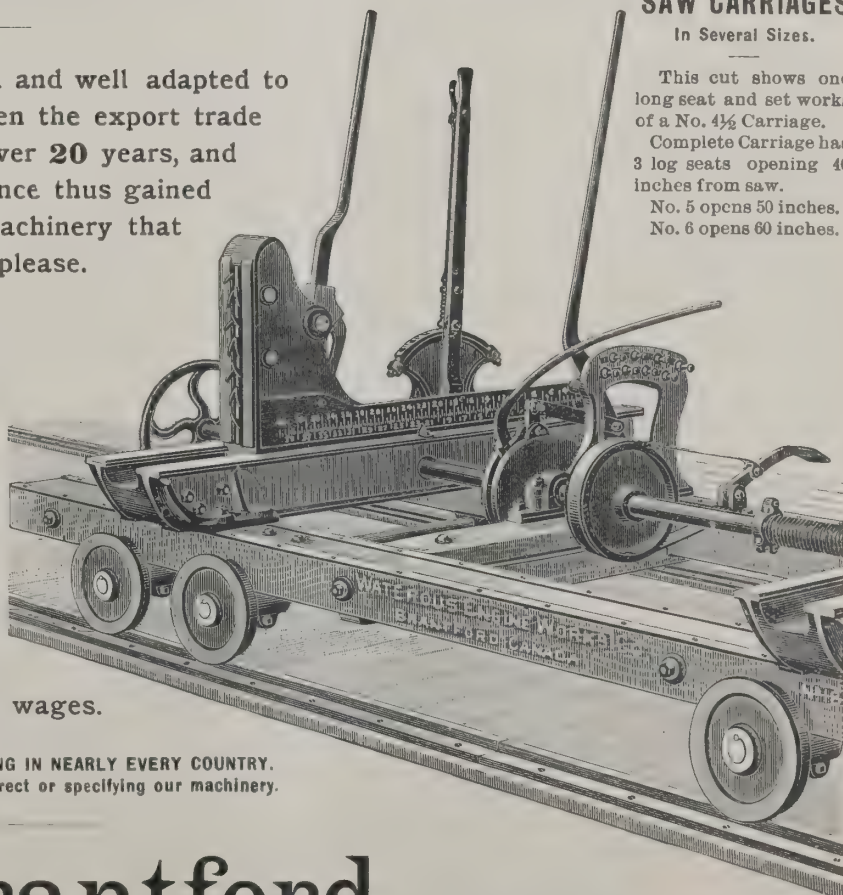


Fig. 32.—No. 3 Saw Frame.

SEND FOR ILLUSTRATED
CIRCULARS AND
PRICE LISTS.
ALWAYS STATE WORK TO
BE PERFORMED.

Plans furnished to erect by experts of long practical experience, furnished to erect and run our machinery at reasonable wages.

OUR SAWMILLS ARE RUNNING IN NEARLY EVERY COUNTRY.
You run no risk ordering direct or specifying our machinery.



WATEROUS, Brantford, Canada.

the piano its leading position in the American trade. The fact that Englishmen buy so extensively from American manufacturers is an acknowledgment by them of the superiority of our organs over those of English make.

GRATES AND TILES.

Manufacture of grates and tiles as a separate business has had its growth within the past 10 years, and New York is the great distributing point of the industry. Grates for heating purposes, and tiles for especially luxurious house ornamentation, have, of course, been in common use, but the former were manufactured as a part of the general stove business, while all ornamental tiles were imported from Europe.

Interior household decoration gave the business its swift impulse, and that has been a popular fad only within the past decade. Then, too, the increase in the construction of buildings enormous in area and height made the use of tiling essential for fireproof purposes.

The manufacture of tiles has grown with gigantic strides until there are now 20 concerns engaged in it with a capital of about \$3,000,000, and an output of about \$1,000,000 a year. It is one trade in which capital and output do not bear a relation that is considered healthy in other commercial activities.

The demand for ornamental tiles and massive grates to go with cabinet mantels in house decorating has had remarkable growth. For years English, French and German tiles were imported by the few who were able to indulge their taste in that direction. A few foreign tiles are still imported, but in artistic finish as well as strength, the American-made tiles are now regarded as decidedly better than the foreign in all essential particulars.

TYPE FOUNDERS LEAD THE WORLD.

New York is the home of the type founders. One of the oldest type founding firms now doing business in New York was founded in Hartford in 1804, and almost immediately removed to New York, as it was apparent at that early day that the centre of this great and important business would be the metropolis.

One prominent firm has just completed an order of 100,000 tons of type for the Government Printing Office in Washington. This includes not only what is known as body or roman type, but also fancy faces, and letters for display work. From New York are shipped every day immense consignments of type. Immense printing offices of sister cities, as well as country newspapers in the most remote of hamlets, send to New York for their type, and the output of the type foundries here in a year is something enormous.

Europe has to call on this country for type and many foreign orders are filled each day. A large firm has just sent a large consignment of type to Barcelona, Spain, to Cuba and to Brazil. The South American countries formerly sent to Europe for their type, but England and other type-producing countries have been so far outstripped in the race of progress by New York that foreign orders are pouring into the type foundries here so fast that some of them have much difficulty in filling them, and have to keep their plants working both night and day.

A prominent type founder was asked to assign a reason for this, and he stated that New York had advanced so fast in the art of producing type and had been turning out such a superior grade of metal that foreign countries were beginning to appreciate it and buy their type here. South America particularly has diverted all of its trade to New York and the ease of shipping has contributed in a great measure to extending the trade in type to the South.

The year of 1895 was a very successful one for type founders, and they look to 1896 for even increased prosperity. More type goes out of New York than any other city in the world. The great firms of type founders have learned that they hold the supremacy and they state that they mean to keep it. It is acknowledged that New York leads the world in the production of new styles of faces for type, and every modern device in the manufacture of type is at once taken advantage of by the New York manufacturers.

PRINTING MACHINES.

Thousands of printing machines, from the little job presses to the large and fast newspaper presses throughout the entire country, bear the trademark of New York concerns. In New York alone 100 mammoth printing machines are in constant use, representing an outlay of \$3,500,000. In London there are over 35 newspaper offices in which American presses, the product of New York manufacturers, are used.

New York presses are in use in many foreign countries, in South America and in the English colonies. The country to last adopt the New York presses is Japan, where a double supplement newspaper press has been put up in one of the newspaper offices there, capable of turning out 24,000 papers an hour, and costing \$35,000. This is the first press of this kind put up in Japan.

The latest production of the New York manufacturers is a press which, when completed, will have a capacity of turning out 96,000 eight-page papers an hour, which will cost \$60,000. This press is called an octuple press, and is the latest invention of New Yorkers who have led the world in new ideas and machines for rapid printing.

A large number of small job presses are made by New York manufacturers for the country trade, and all the country printing offices, as well as city job printing concerns, look to the metropolis for their machines. The latest developments in these job presses are utilized by the New York manufacturers, and the most finished products in this line are turned out by them.

MACHINES FOR SETTING TYPE.

Of the prominent inventors in recent years the majority owe the practical results of their ideas to New York capital. The untold wealth of the metropolis is ever ready to place on the market for the benefit of mankind the latest inven-

tions of scientific men. No other city presents such a field for this work as the metropolis. One of the most recent inventions which New York has fostered is that of the linotype machine. This marks the most important advance made in printing since the days of Gutenberg. In spite of the fact that the machine was bitterly opposed at first, there are now over 3,000 in use for newspaper, book and job work. It has caused a revolution in the type-setting industry, in which not another improvement had been made for over 400 years. The machine does not set ordinary type, but casts whole lines in one solid bar, hence its name.

For the past 10 years improvements have been made so rapidly that the machine is now as near perfection as a piece of machinery can well be. The companies manufacturing these machines have their main distributing offices in New York, and are doing an active work in revolutionizing printing.

TYPE-SETTING MACHINES.

Another invention, in this same line, which is being backed by New York capital and enterprise is the type-setting machine. These machines are exported to Europe. The work of several well-known printing establishments in London is done on them. These machines will set the type for the speeches in the British Parliament this winter. The substitution of machine for hand composition in printing establishments will radically change their various mechanical departments. With a type-setting machine a change of face can be had in three minutes. The New York machines take precedence of all in the market and are used for the finest book and paper work.

FUR MANUFACTURERS.

Not only do the society women of New York wear the furs provided for them by New York firms, but merchants from all parts of the country make periodical trips to the metropolis expressly to purchase furs, for the reason that experience has taught them that they can find in New York not only the very best quality of goods, but also the latest fashions and styles.

The New York market supplies the world with otter, sable, mink, beaver, marten and seal fur goods of the very finest quality. New York imports the finest Russian sable, Persian lamb, ermine, astrakhan and Siberian squirrel. The American dressed and dyed otter is considered by experts to be the best in the world. Women of taste admit that the furs manufactured in New York are better in design, better fitting and much more desirable than furs that can be obtained either in London, Paris, Berlin, Geneva or any of the great fur markets of the world.

This is a compliment and a tribute to the enterprise and push of the New York merchants who during the past 30 or 40 years have invested a large amount of capital and who have done a great deal of hard work to bring the fur trade up to the present proud position it occupies in the great business world of the metropolis. It is acknowledged by them on every hand that New York is the place to sell furs, for the reason that it is the home of the very wealthy, and because it is the objective point of the merchants of the country, who come to the metropolis every winter to purchase the finest productions of the finest shops and great business organizations for their local trade.

AMERICAN PERFUMERY.

The success of the American perfumery has been of such a character that many New Yorkers have taken up the business, so that now it is an industry which has taken a high rank in the business world of the metropolis. The New York manufacturers excel in delicacy of their goods, and in the exquisite perfumes which they turn out will be found the inventions of the brightest minds in the business.

The business is an old-established one, and although it is old it does not stand still. New ideas are being constantly advanced by New Yorkers, who are the leaders in the manufacture of fine perfumes.

BEST MUSTARD IN THE WORLD.

Better mustard is made in New York to-day than can be made abroad. There was a time, and that only a few years ago, when a certain brand of mustard made in England was looked upon as unapproachable. It ranked with the general run of foreign-made condiments, and housewives all over the land fought shy of the domestic article.

The industry has developed in New York at such rapid rate that wholesale grocers in all of the big cities look to the metropolis now instead of to London for their cans of mustard. The New York mills do not confine themselves to grinding American mustard seed. They import seed from Austria, France and England, and it speaks volumes for American ingenuity when it is possible to import seed from England, grind it and place it on the market for less than can the English manufacturers.

Here in New York the machinery used in the manufacture of mustard is far in advance of that used abroad. Yankee inventive skill has been used to the best advantage. New York, in the opinion of the trade, produces the purest mustard in the market. It is an American article, made by American workmen, in American mills, in the greatest American city.

COCOA AND CHOCOLATE—NEW YORK PRODUCT EXCELS.

For the past fifty years the manufacture of chocolate and the preparation of cocoa have been going on in New York. There are now some 25 factories and firms engaged in the business. A prominent manufacturer said to a reporter in relation to this:

"The reason why New York is the centre for the manufacture of the various forms of chocolate is because both the cocoa bean and the sugar required in its manufacture are grown this side of the Atlantic, and are more easily produced here than abroad. There is also another reason why the domestic chocolate is better than the imported, and that is because we make a better quality of

NICHOLSON FILES ARE
THE BEST.

USE ONCE
USE ALWAYS.

LARGEST PRODUCERS OF FILES AND RASPS IN THE WORLD.

NICHOLSON FILE CO.
PROVIDENCE, R. I., U. S. A.

3,000 VARIETIES
INCREMENT CUT
FILES AND RASPS.

Send for
Illustrated Catalogue.



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Massachusetts Brand.

SOLID BRAIDED CORDAGE.

Sash Cord,
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SEND FOR SAMPLES.

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SAMSON BRAND.

SAMSON CORDAGE WORKS, - - Boston, Mass., U. S. A.



McCAMMON PIANO CO., Oneonta, N. Y., U. S. A.

Write for
Catalogue and
Prices.

TUCKER'S ALARM MONEY DRAWER.

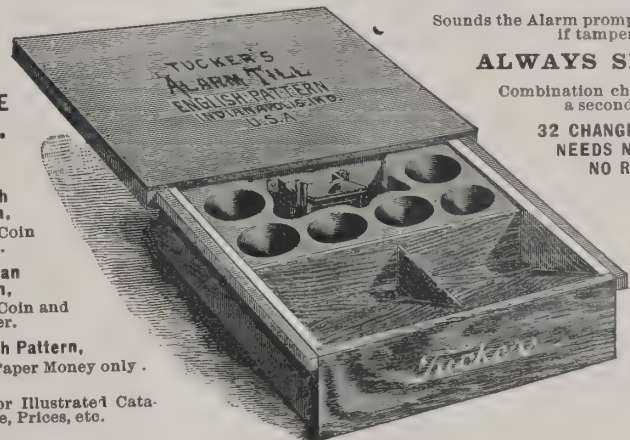
Made
in
THREE
Styles.

English
Pattern,
For Coin
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Pattern,
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For Paper Money only.

Send for Illustrated Cata-
logue, Prices, etc.



Sounds the Alarm promptly
if tampered with.

ALWAYS SET.

Combination changed in
a second.

32 CHANGES.
NEEDS NO KEY.
NO REPAIRS.

Carefully packed 1/2 doz. in a
strong moisture-proof box,
10 lbs. weight 100 Nos.
F.O.B. New York or Liverpool.

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General Agents: { JNO. H. GRAHAM & CO., Chambers Street, New York.
PHOENIX HARDWARE CO., Tryon Street, Liverpool

THE BAXTER REGISTER

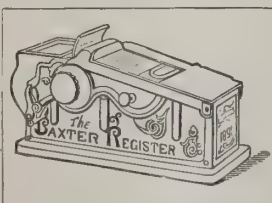
At one writing makes 3 bills (5x4 3/4 inches), two coming out of machine while triplicate is retained inside under lock and key. Thousands in use in every line of trade. In retail business top bill with firm's name printed on can go to customer, second to cashier, third copy retained inside for proprietor's use.

Protects cash and charge sales.

Gives proprietor a record of every transaction.

Used to an advantage in factories for duplicating orders, etc.

Send for illustrated circular.



Made of metal, nickel finish.

Dimensions: 5 1/4 in. wide,
14 in. long, 7 3/4 in. high.

EXPORT PRICE, \$20,
for Register and supplies
for 6,000 sales,
printed with any head-
ing and language
desired.

Packed securely in box weighing 50 lbs. F. O. B. Chicago.

THE BAXTER REGISTER COMPANY
CHICAGO, ILLS., U. S. A.

Wrought Corrugated Steel Strap and T Hinges.



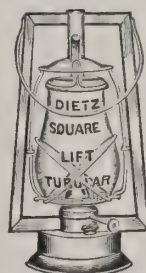
They cost no more than the old style and are much stronger.

They are also somewhat lighter, thus making
freight and duties less.

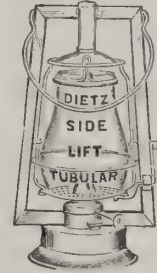
SEND FOR PRICE LIST.

THE STANLEY WORKS, NEW BRITAIN, CONN., U. S. A.
79 Chambers St., NEW YORK.

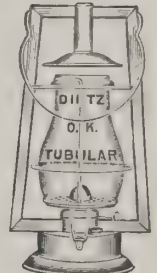
THREE LANTERNS THAT SELL.



SQUARE LIFT OR STAR.



SIDE LIFT OR VICTOR.



"O. K."

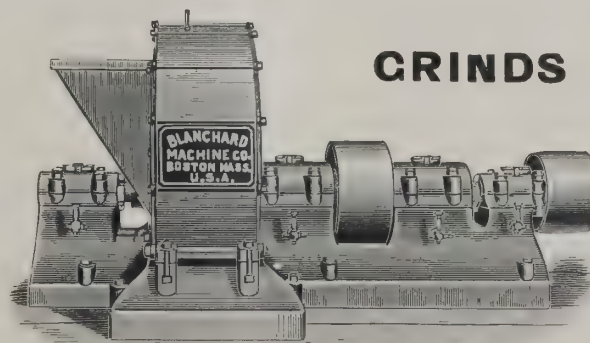
The above illustrations show three of our principal No. 0 Tin Tubular Lanterns. They are all well made of the best materials, with extra quality globes and burners. The oil fronts are drawn from single sheets of tin, and afterward retinned. They are fitted with the latest and best devices for moving the globe out of the way for lighting and trimming.

We offer all of these lanterns for EXPORT TRADE at \$7.50 per dozen, no charge for packages, f. o. b. vessel at port of New York, less 50 per cent. discount. Send on a trial order through your commission man, sending duplicate at the same time to us.

R. E. DIETZ COMPANY, New York, U. S. A.

Send for catalogue (Spanish or English) and complete price list.

THE BLANCHARD DISINTEGRATOR



Bones,
Tankage,
Fertilizers,
Glue,
Chemicals,
Soap Powder

and all similar
materials.

DRY or DAMP.

Large capacity.
No skilled attendants
No special
foundation.

SIMPLE. STRONG. COMPACT.

Write us with sample of material.

Catalogue "B" on application.

Orders filled through commission houses.

BLANCHARD MACHINE CO., 303 Congress St., Boston, Mass., U. S. A.

goods than they do on the other side. The American manufacturers give better values and work on a smaller margin.

"One of the reasons why many chocolate manufacturers have had so much success is because New York is a seaport, and in some cases I know of the cocoa beans being landed on the dock near a manufactory in the morning and turned out manufactured goods on the following morning. This merely illustrates to how fine a point the business has been perfected."

The same authority estimated that the product of chocolate and cocoa of New York manufacture was 3,000,000 pounds a year. He made the prediction that it would not be long before this amount would be doubled.

AMERICAN SHOES.

Recent years have witnessed a marked change in the shoe trade throughout the United States. It is no longer a fact that a shoe combining style, durability and comfort can be made by custom only. The increased facilities of the large manufacturers, improved machinery and modern methods have placed within the reach of all a class of goods which are all, and even more, than are custom-made shoes.

Public taste in this, as well as in all other matters of attire, has been educated up to such a plane that a manufacturer who does not adhere closely to the popular style dooms his business to a short life. New York sets the fashions for the new world. What New York approves is well; what New York disapproves is destined to failure.

The boast of the New York manufacturers is that they give a tip-top article for style, quality and fit at prices that meet with general favor. They believe that the class of goods made in New York is of a higher grade than those manufactured anywhere else, and the fact that they do a very large export business is proof of the favor which foreign markets have for New York footwear.

For the reason that the metropolis can turn out better shoes than can foreign factories, there is, comparatively speaking, no importing done.

The shoe industry is one of the oldest in New York. The past season has been a busy one for manufacturers and distributors, who look to the future with confidence in the brisk trade which good times and the superiority of their goods will bring.

World's Expositions.

THOUGH invitations have been sent out to the people of the world to meet France at the Exposition in 1900, it is by no means certain that there will be an exposition. In the current number of the *Revue des Deux Mondes* Octave Mirabeau makes a conclusive argument against such enterprises. He shows that as a means of aiding French industry the exposition is a failure. Not only that, it has really ruined some of the most prosperous enterprises that once gave France eminence. He illustrates, in one instance, the ruin of the peculiar handicraft known as "Articles de Paris," or, as we should call them, "Yankee Notions." France delighted the world with millions of inconceivably ingenious odds and ends in this field. When the Germans saw them made in the fair of 1867, they went home, thanks to cheaper organization; in a year or two they flooded Europe with counterfeits of the Paris craftsmen. Similar fortunes befell scores on scores of other industries which the world had hitherto looked to France to produce.

The strongest grounds, however, are artistic and moral. Expositions being but for a time, the edifices are run up with no measure of unity in design; no beauty in form or decoration. Worse than all, when the show is ended an ignorant public clamor demands that the biggest and ugliest edifices shall remain as souvenirs and places of public utility. In 1867 the ugly Palais de l'Industrie was left in the most beautiful esplanade of the Champs Elysee. In 1878 the hideous Palais of the Trocadero was voted a permanent structure, and more hideous than all the monstrous Eiffel tower still rears its unsightly rafters over the Champ de Mars. Public taste is degraded and the historic unity of Parisian architecture destroyed. If this were the worst, or if these were even a temporary gain, "business interests" would be apt to take little thought of this purely æsthetic drawback. But Mirabeau proves that business itself in every branch is demoralized by the spam and strain put upon it. Great manufacturers consulted bear witness that it takes them two years to regain their natural output after an exposition. Many declare that they lose business and never regain it. Indeed, it is easy to see that it is the outside people (exhibitors) who gain in these great fairs. In proof of this, it is noted that enterprising commercial people like the Germans and English have no world's fairs. After every one held in France thus far the Germans have captured some of their standard lines of trade. Morally, the effects are most sinister. The tramps of Christendom swarm to Paris during the six-months' fair, and when it is ended they remain a charge on the city, a menace to society. Again, during the existence of the fair, from May to November, prices go up inordinately, and what is most remarkable, never go back to normal rates. So that, as a result of the last exposition, Paris is the dearest capital in Europe to live in. This, too, in spite of the fact that hundreds of industries have been ruined by the competition the exposition entailed. Chicago's experience was not so calamitous as Paris sets forth, but the Western metropolis, it is clear, desires no more fairs. The outcome is well to keep in mind, for we shall no doubt have a "boom" one of these days for another world's fair, and it is well to be armed in advance.

If an article in *The London Times* on the above subject is to be taken as an indication of the state of public feeling, the Western World is growing wearied of giant exhibitions. Hitherto they have been worked on an ascending scale of magnificence, and it is asserted that as Paris eclipsed herself in 1889 and Chicago eclipsed Paris in 1893, Paris is resolved to eclipse Chicago in 1900. Since by far

the most attractive feature of these exhibitions is, not the number and variety of the exhibits, but the lighter entertainments provided for the motley crowds that attend them, and since the French are unrivalled in the art of inventing and gracefully carrying out new and fascinating methods of amusing the public, they will have little difficulty in beating all the great spectacles of the kind the world has ever seen. Sir Henry Cole, the originator of the first great exhibition, very soon found that industrial exhibitions pure and simple were unremunerative. Sir Philip Owen made them pay by grafting on them a large element of incidental entertainment. The graft has now entirely overshadowed the parent tree. "The industrial exhibits," says Sir Henry Trueman Wood, speaking of the French Exhibition of 1889, "were there of course. They were the ostensible object of the whole organization. Really their chief use was to lend an air of respectability to what without them would have been a raree-show of the highest class. 'The play's the thing' might have been the motto of the last French Exhibition, and still more of the World's Fair at Chicago. * * * The open secret of the whole affair was the love of amusement native in man. A whole section of the great park was devoted to amusements pure and simple. There was hardly a savage people whose habits were not illustrated for the benefit of visitors."

This is nothing new; the shows of the middle ages began in business and ended in amusement. But the thing worth noting is that in modern times, while in no way differing from the ancients in their love of pleasure, men's minds are so impressed with the importance of business that they prefer forms of pleasure that have a business air given to them. In visiting an exhibition men persuade themselves that their chief object is to study art and industry, while in reality they only aim at enjoying themselves.

New Feature in Cotton Gins.

AN original and important attachment for cotton gins has recently been invented by E. T. Brown, of New London, Conn. The new invention causes the mass of cotton in the roll box to oscillate from end to end across the saws so as to bring fresh cotton to the teeth at each revolution of the roll, largely increasing the output of the gin. In the test made not long since at the factory in New London a gain of 45 per cent. was shown over the output of the ordinary gins. While wonderfully ingenious and effective the invention is surprisingly simple and no further machinery or complications are required in the construction of the gin. Experts in this line of machinery, who have seen the invention thoroughly and practically tested at the factory, pronounce it an exceedingly valuable improvement and one that is sure to be an important feature in the cotton gins of the future.

THE first premium for the best collection of pumping machinery on exhibition at the Chilean Exposition of Mines and Metallurgy, held in Santiago, Chili, has just been awarded to The Deane Steam Pump Company, of Holyoke, Mass., U. S. A. Several of their latest designed mine pumps were shown in operation using either steam or electricity for a motive power.

A BROCKTON (U. S. A.) SHOE MANUFACTURER, who recently started two salesmen in Canadian territory, says that these travellers assure him they will work up a good trade across the border. They have already sent in some orders and promise many more. It is evident that the Canadian retailers like Yankee-made shoes, or they would not be willing to pay, as they do, a duty of 25 per cent. ad valorem on all the footwear which goes into their territory from the United States.

ONE of the most wonderful labor-saving inventions of the day is the new electric stevedore or movable conveyor for loading a ship with flour or grain from an ordinary wharf. Its length is 40 feet, two wheels in the centre allowing it to be moved at will. The actuating power is electricity. The revolving belt on which the sacks are placed is of rubber, and passes over 12 rollers. The belt revolves at such a speed as to carry all the weight in flour or grain that can be placed upon it. This apparatus recently loaded a steamer with 3,000 tons of flour at the rate of 75 tons per hour.

AN apparatus made by a St Paul, Minn., concern, which automatically announces the location of any hot bearing about a mill, looks like a good thing. It is an electrical affair, wires being run to each bearing from a central switchboard. It is claimed for the apparatus that insurance companies give much better rates where it is used, and if it works as well as its makers say it will, they certainly ought to. It is estimated that over 80 per cent. of fires in sawmills, factories and planing mills, and most of the so-called mysterious fires which are generally charged to electricity or spontaneous combustion, are caused by journal bearings becoming overheated and the oil flashing.

AT Vienna, not long ago, a trial was had of a pair of safety valves such as are used upon the State railways of Austria, and of a pair of American pop safety valves. They were tried alternately upon the same locomotive. The diameter of the Austrian valves was 4.5 inches, and that of the pop valves was 3.7 inches. The fires were urged by blast until the valves began to blow, and the rise of the steam thereafter was noted. The Austrian valve showed 37½ pounds above the loaded pressure, while the pop safety valve showed only an excess of 11¼ pounds. The rise in pressure noted occupied seven minutes with the Austrian valve and 13 minutes with the pop valve. The conclusion was drawn that the pop valve is nine times as effective as the Austrian, and its adoption was strongly recommended.



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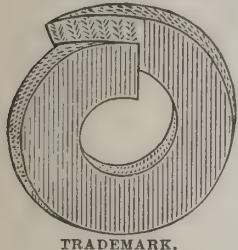
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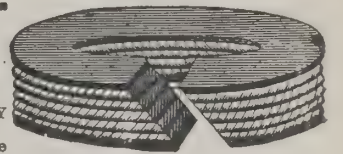
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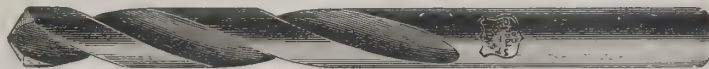


ALBION CHIPMAN, Treas.

The STANDARD TOOL COMPANY, Cleveland, Ohio, U. S. A.

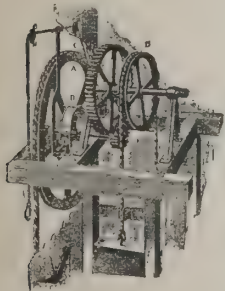
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Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

American vs. Italian Shoes in Germany.

THE Department of State has recently received the following report from Theodore M. Stephan, Consul at Annaberg, Germany, in which he gives a digest of a recent report of the directors of the Board of Trade, regarding the American and Italian shoes in that country:

"A very keen competition is growing up in the shoe trade partly owing to the fact that the producers are endeavoring to dispense with retail dealers, and partly from the appearance of foreign competitors, not only on the Berlin market, but on the German market generally. There is really nothing unusual in the former circumstance; in France, especially in the shoe trade, this kind of business, which excludes retail, has become very extensive. The second fact has reference chiefly to the competition of Italian and American shoes, which has lately made its appearance.

"These foreign firms, which establish their stores in various towns of Germany, seek to simplify their production by manufacturing goods at one price only, and selling these directly to the public. In France, a pair of shoes was at first sold for 12.50 francs. This was soon followed by another quality at 10.50 francs, and it cannot be denied that the manufacturers really do their utmost to supply the best goods which can be made for the price.

"With these foreign firms the native manufacturers cannot, as a rule, compete, because they are obliged to produce hundreds of varieties and not only a single staple article. However, such one-price factories are beginning to appear here and there in Germany also, which sell their goods in a large number of stores directly to the public and therefore independently of the dealers.

"An association of American makers in Boston has also established a store in Berlin for ladies', gentlemen's, girls' and boys' shoes, which, according to the opinion of competent judges, has a good prospect of success.

"The manufacture of fancy shoes is to be regarded as a new and independent industry. The number of factories engaged in this manufacture and erected in 1894 is quite large. This is especially important, as the import of Austrian, particularly Vienna, goods is thereby more and more reduced. Until recently Vienna goods entirely commanded the German market in this direction. However, this will not yet remove the general competition of Austrian factories, which, like those in Italy, have the benefit of lower wages, whereas the American production enjoys the advantage of a better division of labor and cheap material.

"The fact that Germany has 'put a damper' on nearly every article of American importation would make this further fact of the popularity of American shoes appreciated to the extent of building up a large and extensive trade in these goods in that country. The longest pole will knock down the persimmons, and American pluck and ingenuity will surely not fail in the cultivation of this new and promising field of action."

Lighter Vehicles for Germany.

IT is a matter worthy of observation in Germany that, while the roads, even in remote country districts, are the best in the world, being well-nigh perfect, the vehicles which travel them are very nearly the worst to be seen in any country where farms are so well cultivated, and where the people are so fond of outdoor life. With the exception of the heavy draught horses used by brewers and transfer companies, the horses are, for the most part, very small, and apparently quite unequal to the burdens imposed upon them. Given, then, magnificent roads and undersized horses, it is odd that the Germans should not have evolved lighter work and pleasure vehicles. They have not done so, however, and here it is that there appears an opportunity for manufacturers of farm and road wagons to extend their trade. The German farm wagon is not only heavy and cumbersome, but it is very crude. Briefly, it consists of wide sideboards forming a triangular trough mounted on wheels, and without springs. The German father's grandfather used that kind of a wagon; he has never seen any other, and therefore he uses it also. He is heedless of the fact that there exists other wagons just as cheap, capable of carrying twice as much, and not half as wearing on the animals which pull them. Such a thing as the light farm wagon to be used for reaching market speedily is not known, though on the splendid German roads it would be extremely practical. The ordinary stout and capacious wagons are also unknown. The case is the same with pleasure vehicles of the highest class. Of course, reference is not made to the large cities, like Berlin, Hamburg, Dresden, and their surroundings, but to the smaller cities, towns, and their neighborhood. It is true that comparatively recently German manufacturers have been making a kind of four-seated T cart, modelled on the English vehicle, but it is heavy and cumbersome. The light village cart, or dog cart, is not seen, and this despite the fact that an undoubted demand exists for a vehicle easily pulled and cheap. The German is not slow to recognize a good thing when he sees it, and should these various vehicles once be brought to his notice, their introduction would be easily accomplished.

—The cotton area of the United States is greater than the area of the kingdoms of Holland, Belgium and Denmark.

—A car load of redwood for use in making lead pencils was shipped from Sanger, Cal., for Nuremberg, Germany, last month. Some time ago experts from Germany investigated the timber resources of the Pacific Coast in an effort to find a substitute for cedar, the forests in Europe from which the supply of that wood for lead pencils has hitherto been obtained having become almost exhausted. It is said that the redwood from the east slope of the Sierras is the only wood, besides cedar, with a sufficiently straight grain to make it suitable for pencils.

The Germans as the English See Them.

THE rise of Germany as a competitor of this country in foreign markets is one of the most important economic facts of the last 25 years, and, though we may not like it, we must put up with it. Always eager to seize a point of any rival, the German business-man is never so happy as when he can put out of joint the nose of the Britisher, whose language, after a fashion, he has learned, and whose customers he has got to know, while "volunteering" in the Britisher's own counting-house. In our proverbial contempt for our enemies we allow consuls and other servants of the much-official German nation to settle themselves comfortably at promising points of the British dominions, and send home hints to their countrymen how best to oust the Britisher from his own colonial markets. These are matters of such every-day occurrence that they scarcely require comment, but when we find our Teutonic cousin libeling his host into the bargain, we cannot withhold a mild suggestion that he has gone too far; that, in fact, as the American humorist puts it, he "has slopped clean over Crime's dark cup." This leads us to our point, which is as follows: A German contemporary, known as *Die Chemische Industrie*, publishes a long article from a correspondent in British India, whose style betrays a *Geheimrath*-like official starchiness, on the Indo-European trade in pharmaceutical articles and drugs. We wish to call special attention to the writer's statements about quinine and essential oils. Speaking of the former drug, the author states that Messrs. Howards & Sons have practically secured a monopoly in its trade in India "by the aid of advertisements," that the German quinine is disliked because, without any rational reason, it is said to be "weaker" than English, "although Howard's quinine may for the most part be considered as of German manufacture." In other words, the writer implies that Messrs. Howards & Sons buy German quinine and put it up as their own—a supposition, we need hardly say, as malicious as it is stupid. Every one who knows the drug trade is aware that Mr. David Howard has attended almost every London cinchona auction for years, and that his firm buys large quantities of Java bark in Amsterdam for manufacturing purposes. Again, in speaking of the essential oil business, the German writer asserts that although 7,019 gallons of essential oils were imported into India from England last year, and only 47 gallons from Germany, the greater portion of the "English" supply is really distilled at Leipzig. It is a pity that the gentleman who makes these statements should shelter himself behind the anonymity of an unsigned article.—*Chemist and Druggist, London.*

German War on American Insurance Companies.

WHEN called upon to explain the threatened retaliatory measures of the United States against Germany, Baron Marshall von Bieberstein, Minister of Foreign Affairs, stated in the Reichstag (December 9, 1895):

"Concerning the cancellation of the licenses of American insurance companies doing business in Prussia, they had their licenses revoked because they would not conform to the laws, which were the same for German companies and other foreign companies. If the American companies would undertake to conform to the laws nothing could prevent them from reopening their business. This matter, he said, was purely a German concern, over which he could not admit the criticism of a foreign government."

Advices from Germany make it clear that the ministerial references in the Reichstag to the barring out of American insurance companies from transacting any further business in Prussia lack strict accuracy. The assertion of Freiherr Marschall von Bieberstein, Minister of Foreign Affairs, that the companies were suppressed solely because they did not choose to comply with the regulations affecting home and foreign insurance companies alike, totally ignored the fact that the rules enforced against the American companies were drawn up in 1891 by the Prussian Minister of the Interior, purposely to wipe out American insurance companies.

At the time these regulations were concocted their strong anti-American bias was frankly avowed by the officials of the Home Office. It can further be stated, upon authority, that Geheimrath Knibel Doberitz, of the Home Office, openly admitted to the manager of an American insurance company that the Home Office was searching for a way to block out the American insurance business from Prussia, and that he himself could not rest until he had succeeded in doing so.

The difficulty referred to in the foregoing dispatch originated in 1894, when the New York Life, the Equitable and the Mutual Life Insurance companies received a formal notification from the Prussian Government demanding an immense quantity of statistical information. Moreover, the Prussian Government desired to have the system of bookkeeping altered to suit its convenience, so that the companies had either to adopt Prussian forms for their head office work in this country, or of incurring the expense of retabulating the matter in a fashion satisfactory to the Prussian officials.

The Equitable, rather than submit to these conditions, returned its concession to the Prussian Government. The Mutual Life and the New York Life endeavored to meet the demands made of them, but fresh difficulties arose and their concessions were cancelled during the last few months. The impression prevails that the true reason why the American companies were harassed in this way was because their enterprise was thrusting the local German companies to the wall.

—Since the World's Fair in Chicago, with its exhibit of American-made shoes, it is no infrequent occurrence for manufacturers in this country to receive orders for footwear from distinguished people abroad. Even royalty is on the books of our shoe firms. These folks want the best and know where to find it. It's another proof that Yankee shoes lead the world!



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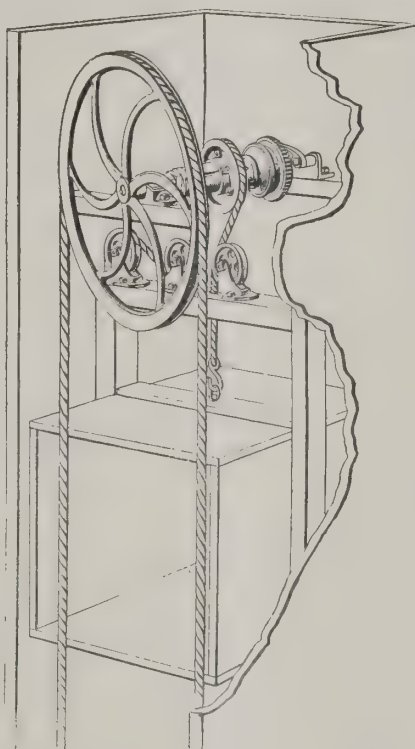
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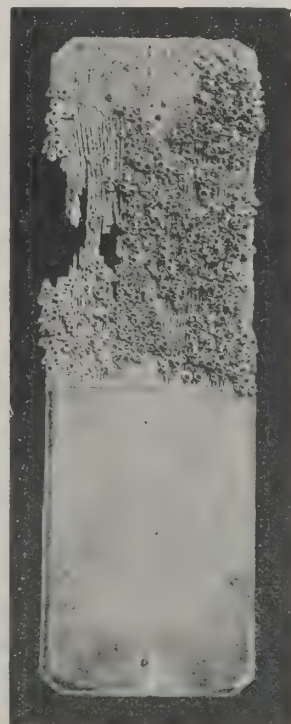
U. S. A.

REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

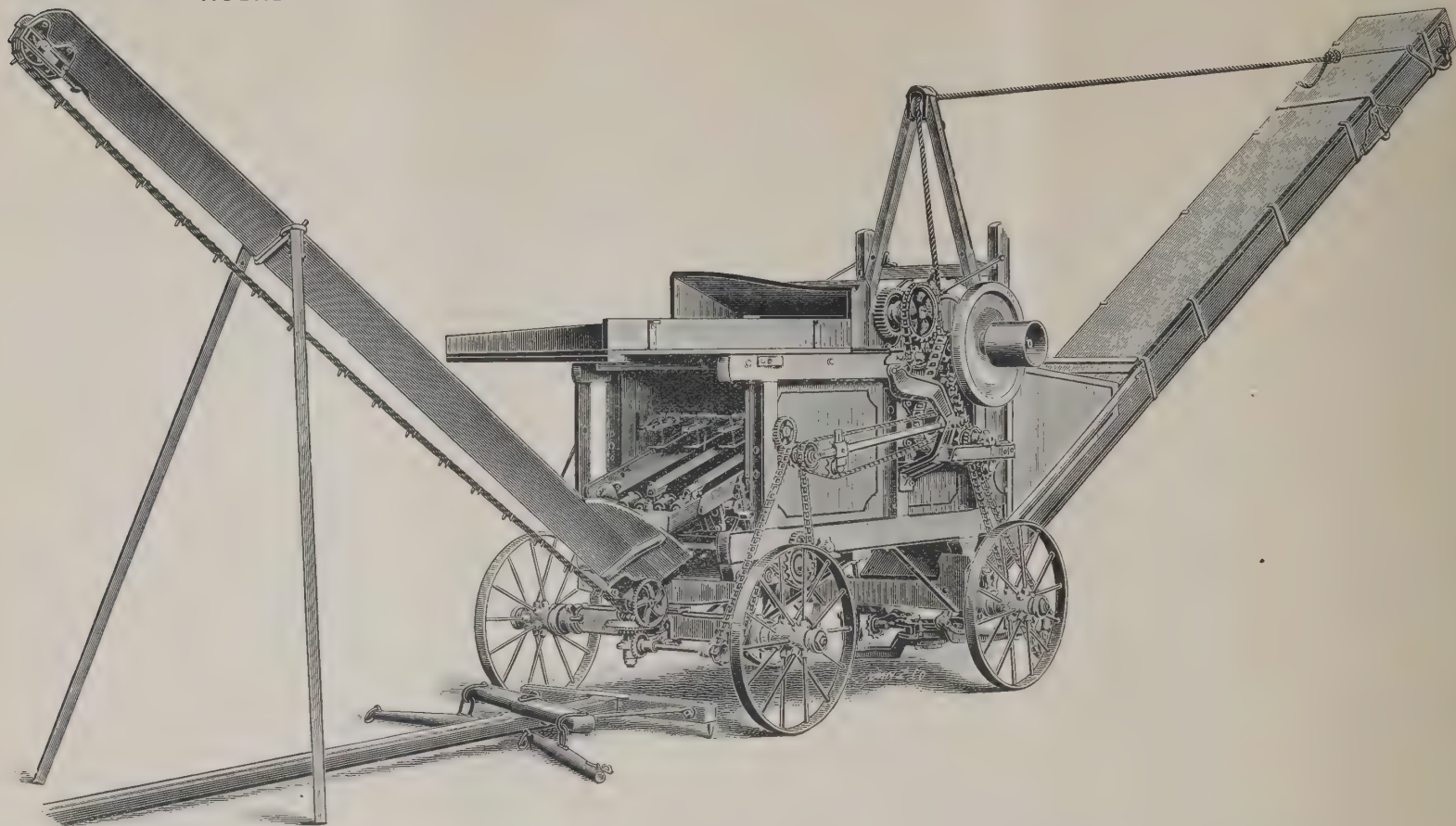
The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

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Master Schooner "Florence Shya."



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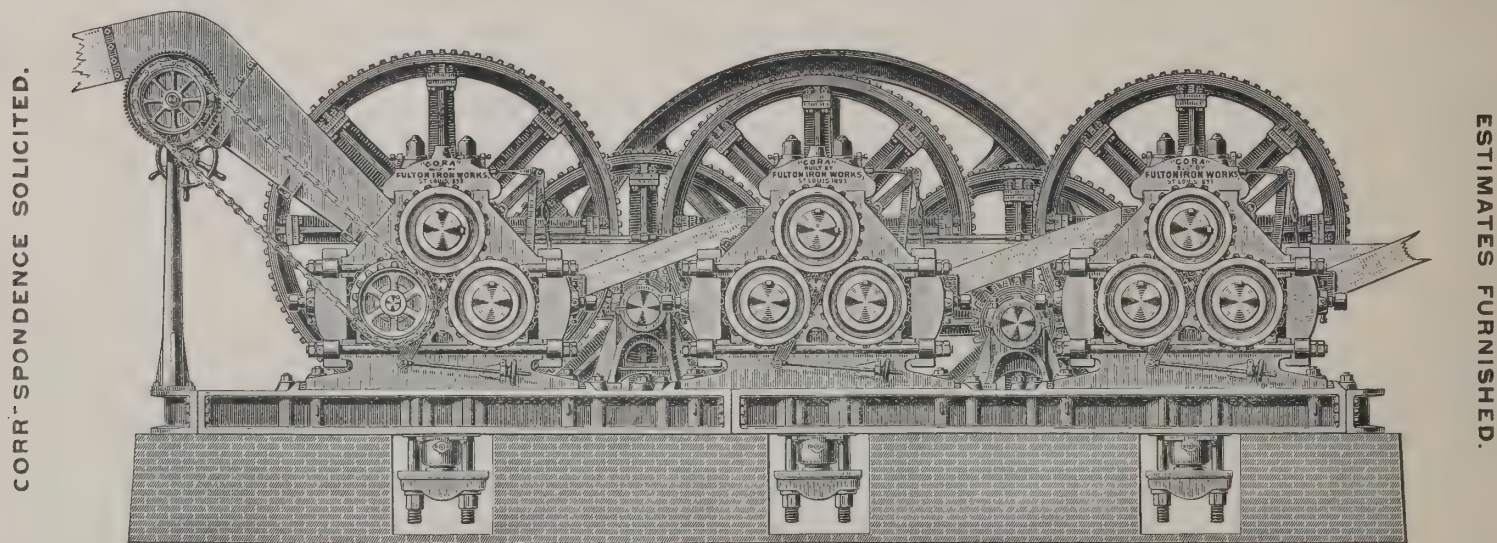


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Per S.S. "COPTIC."

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104 $\frac{3}{4}$; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

American Farm Implements in Uruguay.

A CORRESPONDENT of the *Farm Implement News* says: "Although agriculture is, comparatively speaking, only in its infancy there, yet a large quantity of implements is sent there by the United States, England and other countries. The United States supplies most of the implements and machinery, including reaping and mowing machines, plows and plowshares. Great Britain sends a good many threshing machines, hoes, spades, pickaxes and rakes. I may say, however, that the French Chamber of Commerce, at Montevideo, thinks that the United States has supplanted England in threshers, and likewise ships most of the haymakers. The sale of plows is yearly assuming larger proportions throughout the La Plata basin, and they are sold at prices quite beyond the reach of French competitors. Some of the latter did make an effort. After much trouble and the sending of various types of American plows as used in Uruguay, to France, a French firm was finally found willing to make a plow on the lines desired, but when completed the price was such that the firm who gave the order was prevented from giving any further indents.

"From my knowledge of the country, and from the opinion of experts here, the great difficulty of the agricultural problem is the want of labor. But this want of labor must be in favor of the efficient labor-saving American implements and machinery, and this, indeed, is one of the reasons of American success in that market in this line of goods. The value of the American agricultural tool as an economizer of human labor is so well known all over the civilized world that any recapitulation would be needless here."

Something New for Country Roads.

MR. JOHN O'DONNELL, of Lowville, N. Y., is endeavoring to carve for himself a niche in the temple of fame that shall withstand the ravages of time by his advocacy of steel track highways for ordinary travel. His ideas are attracting considerable attention in central New York. Mr. O'Donnell was a member of the good roads parliament of the Atlanta Exposition. He explains his "steel track" road as follows: "It is simply a horse railroad with a gutter track instead of a raised track. The track is five inches wide on the bottom, with one-half inch raised sides. It is laid on longitudinal timbers, supported by cross-ties. The middle between the tracks is filled with rubble stone and rounded up, the water running into the iron tracks at the side, from which it is led off to the roadside by conduits. This gutter takes care of the surplus water perfectly, costs less than macadam or telford road, and when built is a practical railroad to every man's door. It is a perfect road for wagons, bicycles and the coming road motor, which is now being extensively manufactured in the United States."

This idea seems feasible, especially in the thicker settled districts, where the amount of hauling would justify the expense of construction.

Wind as a Motive Power.

PERHAPS there are few of us who give any thought to the power in the wind that is so little utilized. Mr. Frank Waldo has collected a number of reports from various sections of the United States of the work done by wind wheels. We give below a few of these reports:

In Texas a wheel 12 feet in diameter raised 50,000 to 100,000 gallons of water per month to a height of 50 feet. In Wisconsin a wheel 10 feet in diameter raised 50 barrels of water per day to a height of 50 feet. In Iowa a 10-foot wheel raised water 40 feet in sufficient quantity for 300 cattle. A 16-foot wheel in Missouri has ground 20 bushels of corn in one hour. A 10-foot wheel in Nebraska raises 1,000 gallons of water per day to a height of 70 feet.

A case deserving more notice is one reported by P. H. James, of Cortland, Neb. He used a wheel 10 feet in diameter for pumping water a distance of 130 feet through a two-inch pipe. Most of the available wind was used. On one day 100 barrels were pumped in 11 hours. The interesting feature is the record kept of water pumped for over a year, which is as follows: January, 1,500 barrels; February, 1,500; March, 2,000; April, 2,500; May, 2,500; June, 2,500; July, 2,500; August, 2,500; September, 2,500; October, 2,000; November, 2,000; December, 1,500. How much could have been pumped had all the wind been utilized it is impossible to say, but the pumping of 25,000 barrels in a year's time is certainly a practical demonstration of the usefulness of these wheels.

Steel Fence Posts.

FROM the stone wall and rush fence of our greatgrandfathers, to the present strong, graceful fence, with wire on the International steel fence posts, is a long stride. The evolution of this perfect fence has involved many experiments and much expense, but the question is now settled to the satisfaction of all. Every enterprising person who has any use for a fence has arrived at the conclusion that the strongest, cheapest, best fence is made of some kind of wire; plain barbed, woven, or some of the patent fences and steel fence post invaluable to railroads also render it of International Steel Post Co., St. Louis, Mo., U. S. A., office 710 Chestnut street. This post has been highly recommended by the chief engineers of many railroads, who consider it the best adapted for fences of any that has come to their notice. The post is cylindrical, rolled from a sheet of cold steel, No. 16 gauge, is 7 feet long, $2\frac{1}{4}$ inches in diameter at the top, and $3\frac{1}{2}$ inches at the bottom, which is stronger than a flat, angular or solid post. The company also makes other lengths from 4 to 8 feet. The same reasons which make this fence post invaluable to railroads also render it of incomparable value to farmers and stockmen. It is driven into the ground with a wooden maul; as it is driven it spreads at the bottom and automatically anchors itself. Any one can erect a fence, using the steel post, much more rapidly than any other kind, as the posts can be driven at the rate of one per minute. As to expense, while the first cost may be a little greater in some localities, than were wooden posts used, it must be remembered that the steel posts last forever, the wooden posts but for a few years, and is emphatically the fence post for farmers, ranchmen and railroads. The International steel fence post is fire-proof and rust-proof; frost cannot upheave it; the staples will not pull out, or the wires get loose, as with wood posts; in fact, it is indestructible from any natural causes. It is adapted to plain or barbed wire or any of the patent fences. The posts can be placed at further distances apart than wooden posts, because they stand firmer in the ground; weeds and grass can be burned and insects destroyed without any injury to the posts; high water and overflows will not raise them out of the ground or cause them to float away. At a recent test made in St. Louis, 28 steel posts were driven in the same time it took to dig two post holes for wood posts.—*Farm Machinery*.

American Fruit Packages for Italy.

AMERICAN fruit packages are becoming more and more popular in the Mediterranean trade. It is believed that the fruit producers of Italy will adopt the more modern fruit packages used in the United States. An importer of fruit, resident in New York, has recently visited Italy, and was present at a conference held by the ministry of agriculture of Italy, and he showed them the various boxes, crates, baskets and the like which are used in the United States. The Italians had never before seen such packages, and their complaint was that they had neither the wood nor the machinery to manufacture them. The New York merchant told them that, as the United States produces the shooks to make boxes for their oranges and lemons, it would be an easy matter for the same country to supply the same packages at a nominal cost. If these are generally adopted the United States lumber interests will be benefited. In any event, as the Italian fruit grower becomes acquainted with our modern appliances, he will either purchase the manufactured article in this country, or will buy proper machinery and wood here to develop that industry. At all events, it means an enlarged demand for hard-wood fruit packages from the United States, either in the form of wood or the manufactured article.

American Apples the Best.

ENGLISH apples are of inferior color and appearance, and are quite outclassed in the British market by the American fruit, much to the discouragement of their native farmers. Says one English grower: "It is a standing disgrace to fruit growers to quietly stand by and see the American Baldwins and other kinds of apples that have travelled thousands of miles by road and sea sold at our very doors for six to eight cents per pound, while our own home orchards remain in the most deplorable plight." It is appearance that sells fruit the world over.

—Large quantities of Californian wines are being sold as "Spanish Claret."

Water Wanted and Not Wanted.

IT WOULD be difficult to completely picture all the uses made of water or all the circumstances under which the presence of water is objectionable.

Means for obtaining water for its multitudinous uses have engaged the thought or excited the effort of inventive and mechanical genius in all ages. The delivery of an amount of water sufficient to meet the requirements of any case, at least expense and to have the means employed always ready for use, so simple and perfect in working parts that any person of ordinary intelligence can operate it without liability of getting it out of repair, is a desideratum long sought by users of such apparatus. That this should be so will be readily understood when the demands of water are considered—for city houses, country residences, manufacturing establishments; of greenhouse, garden and lawn; of farm, stable and stockyards, and to protect property from loss by fire. Many of these wants require the raising of water to considerable heights.

On the other hand, there are many places which it is equally desirable to free from water, when the need is to raise it in large quantities but a few feet, then permit it to flow away from the premises, such as draining brickyards, quarries, turpentine distilleries, etc.

All requirements for the use of water involve the double problem of an apparatus that will force or raise the quantity desired to the necessary height, and of performing the labor mechanically. This demands the use of wind, steam, gas, hot air, vapors, electricity, or other agents of mechanical power, in the simplest yet most effective form of their application. For these purposes—the apparatus for handling the water, and the mechanism for its operation—there are a multitude of devices, some excelling in one particular, or for a certain use, and others excelling in different ways. None can be expected to completely satisfy all requirements where the dissimilarity of purpose is so great, but given a specific case and the apparatus can be found to satisfy it in a complete and most efficient manner. This is demonstrated by the employment of such a hot-air pumping engine as the "Ericsson" and "Rider," fully described in the catalogue of the De Lamater Iron Works, of New York. By referring to the advertising pages of the AMERICAN EXPORTER, foreign buyers will find sources of supply for all kinds of pumping apparatus desired for raising water and delivering it wherever it may be most serviceable and convenient for use, or for removing it, when so desired, from almost any place.

Ill-Fitting Harness.

IF the owner took half as much pains, says a recent writer, to fit the harness to horse or mule as he does to get a good-fitting coat for himself there would be fewer sores, scabs, scars and hides with hair worn off. Harness is bought at haphazard, when it can be bought cheap at auction; or, when there is an immediate use for it, the purchase is made at a shop that does not keep an assortment; so it happens that the animal, big or little, long or short, is put into a gear that pinches in one place and hangs loose in another. This is the way faithful, hard-working beasts of burden are treated. Every work horse has an inalienable right to perfect-fitting harness when put to service; his owner can't afford to work him in a different kind. The tortures of ill-fitting harness are intensified by the sun, dew and rain, making it about as rough and hard as it would be if it was made of cast-iron. Keep the harness out of the wet as much as possible; keep it soft and pliable with oil, especially the collar, which should be kept clean from dirt and hair.

English Tars and American Beef.

ARMOUR & CO, of Chicago, Ill., U. S. A., received an order to supply the mysterious and much-talked-of British flying squadron with 500,000 pounds of canned corned beef. Rumor had it that this famous squadron has been specially put into commission to scare the wits out of poor Uncle Sam, and make him wish that he wore his trousers longer. In the mean time, Samuel is not much "scarified," and is magnanimous enough to feed his "enemies" from his capacious larder; but don't things swing round in these days of evolution? Time was when Tommy Atkins and Captain Jinks of the Horse Marines swore by "Hinglish beef on Hinglish bones," and believed that they could not come out at the right end of a "scrap" unless primed up on the home-produced article; in fact, they had learned that English beef, like the wooden warships of old, make up the bulwarks of the British constitution. Nowadays the English Government knows better.

Chicago has treated the flying squadron homeopathically, or, rather, has "Armour plated" the whole outfit. Let us poetize the occasion, dedicating our effort, "The Chicago Fed Dragoons," to Mr. Alfred Austin, Britannia's Poet Laureate:

Down from the hills they came in squadrons and platoons,
Five-and-twenty fighting men and a couple of stout gossosons,
And as they marched behind the band to patriotic tunes,
You'd think that fame would gild the name
Of the Chicago Fed Dragoons.

National Provisioner.

T. DARIMONT, of Brussels, Belgium, has been handling American wheels in Belgium for two years, and says there is a great demand for them. Standard American wheels, he says, are finding a ready sale in all parts of Europe. Mr. Darimont came over to look at the latest models and get other information that will enable him to push the foreign business this year.

Superiority of American Carriages.

WE unhesitatingly assert that the American carriage, both light and heavy, is a more perfect vehicle in construction and finish than that made in any other country in the world. We concede to English builders the credit of making durable work, and giving lessons to us that we have not been slow to learn, but we deny that ours are inferior to the English in endurance or beauty of finish. The endurance is a matter that can be determined by actual use, and we know that English carriages, even from the leading builders, do not wear as well in our climate as those of much less reputable builders in this country, but this does not, of necessity, condemn the English vehicle. On the other hand, it teaches a lesson in climatic influences. Reports from South American countries are largely in favor of the American carriage as to durability. Style is a matter of taste, but finish is so apparent that there need be no dispute, and in this the American builder holds the palm. He has met his English competitor at world's exhibitions, and has never suffered from comparison.

The American carriage is made to sell, and to sell it must possess real merit, style, durability, finish, and the elements which secure comfort must be present, otherwise the buyer of to-day will ignore them. We have faith in the American carriage builder. We know him to be wide-awake to the importance of correctness in style, superiority in material, and mechanical construction and perfection of finish. Whatever will increase the durability and add to the artistic effect, he will have, whether it be of home or foreign origin. Even the builder of the cheap buggy recognizes the importance of this, and better materials are now used by him than were to be had even by the leading builders 50 years ago.—*The Hub.*

Exporting American Paper.

FEW industries are advancing with such rapid strides as that of paper-making. American genius has equipped our mills with machines of marvelous power and efficiency, and improvements in this direction are yet in progress. We have, to be sure, a splendid home market, growing and expanding right along, and there is cause for genuine satisfaction in the fact that Americans are the most liberal consumers of paper in the world, and that, too, of good stock, it being notorious that there is a smaller demand for the "cheap and nasty" in this country than in any other country on the globe.

There are a great many non-paper-making countries which are comparatively new, and where the manufacturing spirit is only just beginning to develop. These afford a proper outlet for our surplus, their powers of absorption expanding with our own increasing productiveness, so that there need be no fear of a diminishing demand.

It is something to be proud of, certainly, to be supplying paper to several London daily papers, because it so completely refutes the idea that high wages mean dear products. Great Britain's paper-making industry is well developed, however, and any footing that we may obtain in her home market has a double satisfaction not far to seek nor difficult to understand.

The significance of an English demand for American paper lies in the fact that our high-priced, intelligent labor produces cheaply, and can, quality for quality, hold its own in any market where we may choose to act persistently and energetically.

Enlarged Manufacturing Plants.

INDUSTRIAL capital has made some investments representing enormous expenditures during the past year. The enlarging, renewing and modernizing of many plants has been entered upon during a period of prosperity until the country to-day probably boasts an equipment without a national rival. An indication of results growing from the same is found in the way American-made goods are received in foreign countries, where they readily find favor. Every late invention is sought after by the progressive manufacturer, and the surplus wealth that is going out in this line insures the excellence and permanency of an industry besides putting the laborer on a better basis, because it is a sure one where positive results and returns can be accurately calculated.

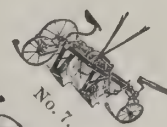
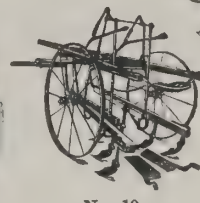
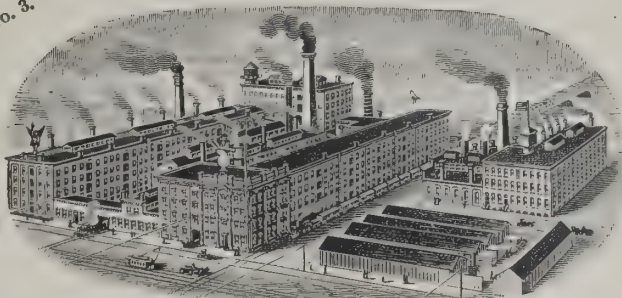
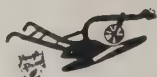
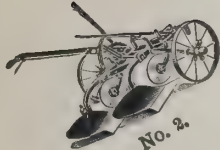
JOHN DOUGHTY, Philadelphia, Pa., U. S. A., has taken out a patent on a machine for treating metal rods. The machine comprises frames with racks adapted to move in opposite directions, the racks receiving between them a bundle of rods to be treated, means for imparting a reciprocating motion to the racks, and plates engaging the ends of the rods, and a feed table extending between the racks. The machine is designed to facilitate the rapid tempering, cleaning and straightening of the rods.

—In the Reichstag attention was called to the fact that bacteria has been discovered in imported rye. Herr Koehler, director of the Imperial Board of Health, explained that an examination had been made of German, American, Russian, Austrian, Roumanian and Turkish samples of rye, with the result that it was demonstrated that the American cereals had the least impurities. He added that experiments proved that bacteria could not resist baking and boiling, and that those found in grain are innocuous.

—During the year 1895 over 1,360,000 animals, cattle and sheep, were inspected for foreign markets, of which 675,000 were shipped abroad. Over 45,000,000 pounds of pork were inspected microscopically and exported, as against 35,000,000 in 1894 and 23,000,000 pounds in 1893. Of the amount exported last year nearly 23,000,000 pounds went to Germany and over 9,000,000 pounds to France. This inspection involved the placing of over 1,900,000 specimens under the microscope.

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No. 2. Wheel Walking Gang Plow, 24 inches.No. 3. Steel Beam Plow with Rolling Coulter S. B.
No. 4. Wood Beam Plow with Rolling Coulter.No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

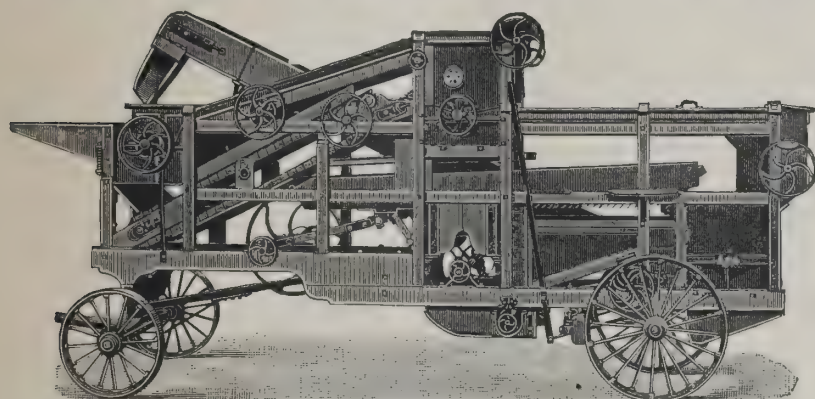
Foreign Agencies:

PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.

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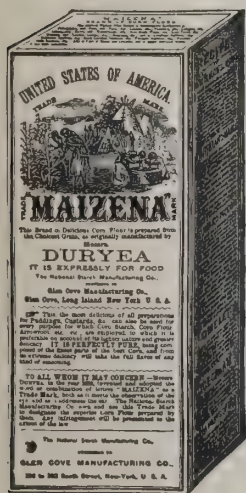
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"MAIZENA."

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

ENCOMIUMS TO ITS MERITS:

LONDON, 1862. "Supremely Excellent."

BRUSSELS, 1876. "Notably Excellent."

PARIS, 1887. "Perfection in Preparation."

CENTENNIAL, 1876. "Notably and Absolutely Pure."

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Paris Exposition,
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None GENUINE without "DURYEY" appearing on the face of Package.

HIGHEST AWARDS WORLD'S COLUMBIAN EXPOSITION.

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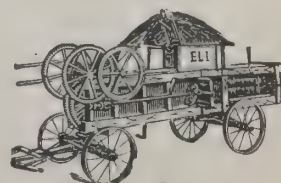
Also manufacture Harrows, Cultivators and 140 different shapes and sizes of Riding and Walking

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All kinds of
Hay and Straw Presses
for Horse and Steam Power.
Special attention to Export Trade.

ADDRESS,

COLLINS PLOW CO.,QUINCY, ILL.,
U. S. A.

England's Defeat Acknowledged.

"AS WE read the reports of our Consuls from every country with whom we have relations we are struck with positive amazement at the supineness with which we seem to have been seized. There was a time in the world's history, not so very long ago, when the mere fact that an article of any kind was made in England was a patent, as it were, of nobility. We then set the standard of excellence for the world. Now we can think of no parallel which will apply, except that of the Chinese, who, at one period of their national existence, attained a pre-eminence in government, science and the various arts, and then stopped short, satisfied with the efforts they had made, setting their standard of excellence by the degree of perfection to which they had attained, and quietly ignoring the fact that the world existed outside of the limitations of their own territory. They assumed, with a stupidity we cannot but wonder at, that what they had achieved had no further capabilities of expansion or improvement, that what they had done was the best that was possible. But the world moved on, and the Chinese nation became a back number. Is it not possible that we, relatively speaking, occupy to the rest of the world the position which China has occupied; that, in our smug complacency, we still regard English manufactures as the best, and vaunt to ourselves the fact that 'Made in England' is all we need stamp on our goods and manufactures to insure them a place among the best that the world can provide? A nation which reaches such a condition as this needs a lot of teaching, and before our manufacturers wake up to the fact that they are no longer the makers of the best articles the world can supply we shall need a still greater amount of instruction than we have already acquired.

"England is, in her machinery, ideas, manufactures—in short, in everything which can be produced by the skill of man, supplemented by machinery—already a back number among the nations. She is rich enough to stand the drain for a time, but as surely as the world exists, as progress extends, so surely is the ground being cut from under our feet by the enterprise, skill and invention of other nations. The Germans, the French, the Americans, and last, but not least, the Japanese, are rapidly supplanting us in the markets of the world, with goods not only cheaper, but absolutely, side by side, irrespective of price, better than any we can furnish. It is about time that England awoke, shook off the sloth, the crass stupidity, we may say, of her present attitude, pulled herself together, and admitted the fact that, in the words of the immortal Jasper, 'the world do move,' and re-established her precedence as the producer of the best."—*Invention, London, Eng.*

An English Play in Two Acts.

ACT I.

SCENE: British Lion in its den, surrounded by its admiring young, roaring terribly with delight.

(SPECIAL, BY TELEGRAPH)

"BANQUET, MANSION HOUSE, "LONDON, November 9, 1895.

"Be it in the way of war or the way of commerce, we are equal to any competition that may be opposed to us. [Cheers.] "SALISBURY."

ACT II.

SCENE: Same Lion reading dispatch from some of its young that had encountered the American Eagle in the realm of the Russian Bear. Its surrounding young smoothing its tail sympathetically.

(SPECIAL, BY TELEGRAPH.)

"ST. PETERSBURG, November 20, 1895.

"Mr. Lander, representing the Messrs. Carnegie, who has just received an order, given in hot haste, for 1,100 tons of Harveyized plates, returned yesterday. Lieutenant Commander Meigs, representing the United States Bethlehem Company, is here still and sanguine that the famous company he represents will receive its share of the orders which the Admiralty will be called upon shortly to give out. One, if not more of the English firms, has retired in face of this strong American competition." [Tears.]

(Undertaker drops the curtain.)

South Wales Tin Plate Trade.

THE new year opens with an apparently gloomy prospect for the South Wales tin plate trade. A number of works are closing, and with very little prospect, so far as can be seen at present, of reopening. It is quite true that the American industry has difficulties of its own to grapple with, but the productive capacity of the tin plate works in both countries is far in excess of consumption, and no new uses of any importance have as yet been developed. Only those works that are best equipped with the most improved plant and conveniences, and are most favorably situated for obtaining raw material and marketing their productions are likely to survive under the circumstances. It is a serious matter for a large working population in South Wales.—*Hardwareman, London.*

—One firm in Racine, Ohio, U. S. A., purchased over 1,500,000 bushels of dried apples in 1895, all of which have been shipped to Germany. It is claimed that this is the largest shipment of this product ever made by a single firm in the United States to that country. They were bought in southern Ohio and the river counties of West Virginia.

United States Advance Towards Commercial Supremacy.

OUR mines are not on the weakened and expensive plane of production; we have in a few years assumed firm control of the iron markets of the world, and the point where Great Britain winces most is that which involves an aggressive and progressive invasion of her export fields. In South America, in all the Pacific Islands the trade of England has lessened year by year, while that of the United States has increased in a wonderful ratio. Even in England's own colonies, American tools, machinery and products generally are highest in favor and in increasing demand.

The possible earning capacity of our mines and factories has never been fairly demonstrated until the encouraging conditions of the past year have brought out the vast reserve energy of our people. The increase in gold, iron and coal production, enormous as it is, simply foreshadows what double impetus and auxiliary machinery may do; the immense additions and improvements made during 1895 in our large industrial plants indicate that shrewd, far-seeing minds discern augmented demand, and know what to do when the surplus accumulates. To citizen or foreigner the "Commercial Day" celebrations by American Boards of Trade and Chambers of Commerce enforce a significance something more than merely comm morative. While the event marked a celebration of Washington's approval of the Jay treaty with Great Britain of December, 1795, and was a centennial observance of the birth of our commercial independence, it likewise demonstrated the marvellous progress of a century and the manifest supremacy of the United States in the industries, in all mercantile enterprises. It afforded a bewildering comparison—showing that from a foreign trade of \$67,643,725 in a year, 1794, our domestic exports of breadstuffs, cotton, minerals, oils and provisions alone in 1895 has a monthly average that bids fair to roll up a total exceeding \$810,000,000. Extended investigation in detail would afford figures still more startling—would prove the proud truth that has been dawning on the world for nearly a decade, that American enterprise and American resources are boundless, that the United States holds powers in reserve that exerted would promptly place it beyond the ability of any nation to hamper, humiliate or outstrip us.—*Chicago Journal of Commerce.*

A British View of the Implement Trade in Russia.

THE report of British Vice-Consul Martin, located at Rostoff-on-Don, Russia, upon the implement trade of the great empire contains much valuable information for American manufacturers.

Quoting from the report as given in *London Ironmonger*: The trade done in 1894 was not so satisfactory as in 1893. This depression was principally due to the fall in prices of grain and to the poorer harvest in this district and the Caucasus provinces, as compared with the previous year. In English machinery, about 190 steam threshers and engines were sold, valued at £102,702, as against 300 in 1893, valued at £162,162. The sales of American machines, with the exception of hay rakes— of which 600 were sold, valued at £4,540, against 1,700, valued at £12,865—increased considerably, consisting of about 3,000 reapers, equal to £81,081; 700 binders, equal to £34,054, and 200 mowers, equal to £3,891, against 2,000 reapers, 350 binders and 120 mowers, representing a total of £73,416 in the preceding year. The other foreign machinery disposed of, besides a small number of drills and other small machinery, consisted of 350 horse-gear threshers, 500 winnowers and 500 plows, equal to a total of £28,647, compared to 450 horse gear threshers, 700 winnowers and 2,000 plows in the year before, representing in all £45,458. In Russian machinery the sale of reapers amounted to the same as in 1893—about 4,000 having been sold, valued at £64,864. In plows there was a decrease, sales amounting to 6,000, valued at £25,946, against 7,500 in the previous year, representing £28,108.

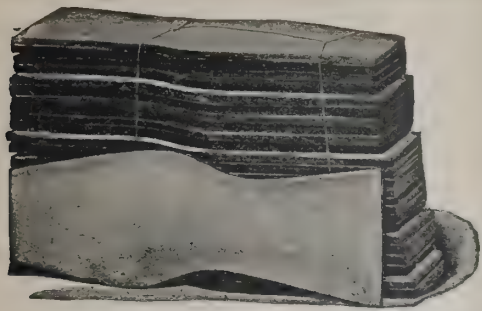
An English Confession.

THE Walsall Chamber of Commerce did wisely to consider the formidable competition to which local makers of harness fronts are subjected on the part of manufacturers in the United States. One class of these articles is being sold at 3s. 8d. per dozen and another class at 4s. 2d. per dozen. The quality of these goods is undoubtedly inferior, but the significant fact remains that they cannot be produced in this country at anything like the price, and the serious feature of the matter is, that these articles, inferior as they are, sell freely in the place of English goods in our own colonies. The general use of labor-saving machinery in America is the secret, no doubt, of their successful rivalry in this branch of manufacture, and it would seem that in this matter Walsall will have to look to its laurels.—*Hardwareman, London.*

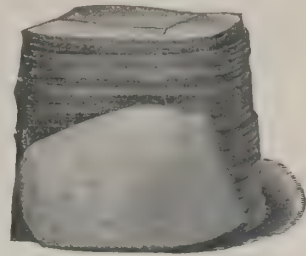
"A THIRD OF A CENTURY OF PROGRESS" is the title of a handsomely printed brochure, issued by The B. F. Sturtevant Company, of Boston, Mass., U. S. A., giving a historical account of the origin, progress and present position of their great undertaking.

"From the least of beginnings, from a crude blower with but a single use to the many types of carefully constructed blowers of to-day with their multitude of duties, the story is one of constant progress. A story, indeed, of many obstacles overcome, of success often brought out of apparent failure, emphatic proof of the 'when there's a will there's a way.'"

Readers of THE AMERICAN EXPORTER who desire a copy of this brochure can obtain the same by addressing the company as above.

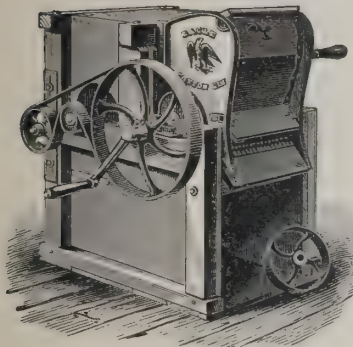


Shoemakers and Shoe Repairers save Money, Labor, Waste and Time when they use Cut Sole Leather (Soles, Half Soles, Heel Lifts, etc.) Prices and full particulars will be furnished on application.



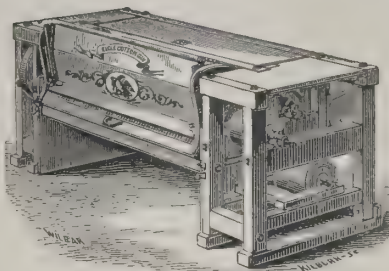
BAXTER, STONER & SCHENKELBERGER,
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EAGLE COTTON GINS.

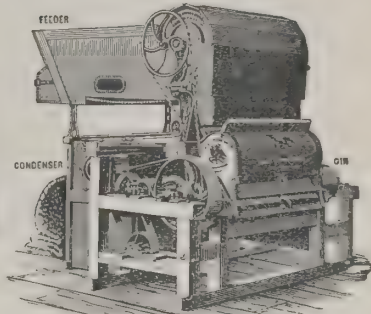


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Power Gin with 10-inch Saws, with Feeder and Condenser.

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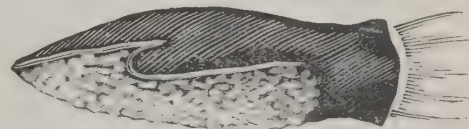
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FOR BLACKING AND POLISHING A STOVE.

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FOREIGN PRAISE FOR AN AMERICAN CONSUL.

AMONG the intelligent, economic not sentimental, considerations, are controlling commercial factors. Among the intelligent and appreciative good-will, founded on just treatment, controls commercial preferences. The praise bestowed upon Consul-General Jernigan, of Shanghai, in the following from the *Japan Weekly Mail*, should predispose the people of that nation to give their commercial preferences to those who greatly appreciate, rather than to those who, on every opportunity, seek to belittle their accomplishments.

Recently, referring to a trade report by Consul-General Jernigan, of Shanghai, we congratulated the writer upon having been the first to recognize officially the display of commercial liberality made by Japan in the Shimonoseki Treaty. It has never happened previously, so far as we can remember, that a victorious State exacted from a vanquished conditions plainly unfavorable to the trade interests of the former, in order that the rest of the world might profit by them. Had Japan sought to obtain a monopoly of the Chinese markets for her own spun or woven cottons, she should naturally have desired, above all things, to prevent the establishment of cotton mills under foreign auspices in China, whereas, on the contrary, she included in the Shimonoseki Treaty a clause finally disposing of all the impediments hitherto placed by the Chinese in the path of such enterprise. Has she received any public recognition of her liberality? None, so far as we can see, except from Consul General Jernigan. The projectors of the Ewo Cotton Mills, when announcing by circular that they were at length in a position to carry their undertaking to a practical issue, went out of their way to attribute their suddenly acquired ability to the exertions of the British Representative in Peking, whereas, in point of fact, they owed it entirely to the privileges secured by the Shimonoseki Treaty. For years the British Representative had been working to obtain the required permission from the Chinese Government. He had even begun to be very doubtful whether such a concession would benefit the British Empire, since the machinery needed for establishing cotton mills would probably come from the United States, and the products of the mills would compete ruinously with manufactures imported from Great Britain. But the conclusion of the Shimonoseki Treaty settled everything. Immediately her Majesty's Representative obtained for his nationals the permission of the Tsung-li-Yamen, under the right conferred by the most-favored-nation clause, and within a few days the Ewo Mill projectors were able to inaugurate an enterprise that had hung fire for years. If they shrank from openly accrediting that consummation to Japan's cosmopolitan liberality, they might at least have refrained from attributing it to the efforts of the British Representative, as though to place on record their indifference to what Japan had done. It is not to be assumed, of course, that Japan's action was purely altruistic. She doubtless desired to conciliate Europe's good will. But, at all events, that is a spirit that Europe should try to develop by approval instead of chilling it by injustice. We fear that this experience may serve to drive Japan into the wholly selfish grooves from which it ought to be the object of her foreign friends to hold her back. A correspondent from Shanghai, writing on the subject, says: "Your editorial comment on an extract from one of Consul-General Jernigan's reports, recently republished in the *Mail*, is timely and certainly just to Japan. Possibly you may have seen another report from the same official, in which he says: 'Japan has accomplished more for civilization in Asia than a hundred years of European diplomacy and arms.' The machinery imported by the Ewo Cotton Mill would have remained on shipboard or in a godown until Japan's action created the right to land and use it, and it is most unfair to Japan to withhold the credit that is justly her due. Historic truth ought to be no less sacred than religion, and it is a historic truth that Japan has done more to liberalize commerce in Asia than Europe and America combined have done. It will require a lever of great motive power to turn China over. Europe made a mistake in checking the progress of Japan's arms, probably not a mistake when considered from the point of self-interest, but certainly a mistake when viewed from the standpoint of a more liberal civilization."

American Oils Abroad.

WITH a total export of American mineral oil products, that is, crude, naphtha, illuminating, lubricating, paraffine and residuum, of 697,390,397 gallons to October 31, 1895, it is very evident that the dangerous competition of Russian oil in foreign markets has had little effect. While for same period last year exports amounted to over 37,000,000 gallons more, the greater part of this may be accounted for. At the close of last season the foreign markets were so overstocked with American oils that the shipments had to be slackened. This condition of affairs has now ceased to exist, and the demand is heavy. While American oil is produced in the present quantities at a price not higher than the average for the current year, it is certain to command a steadily expanding foreign market. There is more danger that the supply of American oil may fail than that it will be driven out of European and Asiatic markets by the competition of the Russian product. There is some encouragement for the belief that the prices will be maintained, notwithstanding the demands from abroad and the fact that the output will be somewhat lessened by the winter months.

—Rubber tires, pneumatic or solid, have come to stay, because of their inherent value as destroyers of vibration and their quality as comfort purveyors.

American vs. European Goods in Brazil.

SEWING MACHINES.—American sewing machines have the reputation of being unexcelled by any imported from Europe.

MACHINERY.—European machinery is greatly objected to on account of the great amount of iron used in its construction; hence its useless weight. The locomotives, for example, are on this account very hard to handle or manage, either in starting or stopping quickly, while the American locomotives are easier to handle, quicker in starting or stopping, pull greater loads up heavier grades, and are much easier to put in order than the English. The American locomotives do not require as much fuel to run them as is required by the English locomotives. On the railroads controlled by Brazilians more than one-half, at least, of the locomotives are American.

CARS.—Passenger cars used on the English railways have the doors on the sides, and passengers are locked up from one station to the other while the train is in motion. The conductor and his men are in a short car attached to the rear end of the train. Before the destination of the train is reached, it stops long enough at some station for the conductor and his men to take up the tickets or collect fares. The American passenger cars are very popular because the people do not like the idea of being locked up from one station to the other and refused free communication to other coaches. The street railway cars are all American.

SHOES.—There are some shoe manufactories in this district, but they are not doing very much toward supplying the demand. One of these used to buy leather from a firm in France, but discontinued doing business with Europe altogether, and now buys from the United States, as it was found that American tanned leather proved more durable than that bought in Europe. Very little business is done in the American shoe trade, but the reputation of the American shoe stands very high among intelligent Brazilians. Shoes made of American leather, either here or in the United States, have proven to be more durable than those of a like quality or of the same grade made in Europe. There are many Americans here who tell me it is an almost invariable rule that a pair of shoes which cost from \$4 to \$8, made in Europe, will hardly last half as long as a pair of the same grade and quality made of American tanned leather; in other words, a pair of shoes which cost from \$2 to \$4 in the United States will equal those of a higher grade made in Europe and sold here for double the money.

AGRICULTURAL IMPLEMENTS.—Agricultural implements made in the United States are the best imported here.—*American Consular Report.*

Thousands of American Wheels Will Be Marketed in Europe.

A NEW YORK merchant made a careful study of the bicycle situation while in Italy, France and England. He attended the Manufacturers' Show at the Crystal Palace, and while it was first class in every particular, it is in no way to be compared to the exhibition given by the American manufacturers at Madison Square Garden. It is his opinion that the show building in London does not compare with our Garden, and that the manufacturers there are not nearly so enterprising in the display of their goods as the Americans.

The Paris show, which he also attended, was a much better one than that held in England. One of the most noticeable things in connection with the Paris show was the large number of horseless carriages that were exhibited. In France they are of the opinion that the horseless carriage has come to stay. Mr Spalding, however, thinks otherwise, unless, he says, there is a great improvement in its construction, as the horseless carriage as exhibited is heavy, clumsy and expensive. It is his idea that they will have to be materially improved before they become popular.

Mr. Spalding was much surprised at the interest taken in cycling in Italy. The roads, of course, in the three countries mentioned are far superior to ours, which will account for cycling having such a strong hold there; in fact, during his travels he rarely ran across what might be considered a bad road for cycling. Italy and the Italians have taken hold of the bicycle industry with a determination to master it. In Milan alone last year over 20,000 imported wheels were sold. At the different cycle shows Mr. Spalding visited the American wheels exhibited formed quite an important feature of the shows. He is of the opinion that it will only be a short time before the American manufacturers will compete successfully in England, France and Italy with the foreign makers.

THE HAYDENVILLE MANUFACTURING COMPANY, 73 Beekman Street, New York, are catering to the export trade in plumbing and steam-fitting supplies. This firm manufactures a high grade line of brass and iron goods for steam, water and gas. Having been established 50 years, their experience in the manufacture of such goods certainly should entitle them to the consideration of the trade. They have issued a very handsome catalogue, which they will be pleased to forward upon application.

—It is reported that the Germans who recently made heavy purchases of American apples intend to use this fruit in the manufacture of champagne by an entirely new and secret process. Whether this be true or not, the American apple is gaining a firm foothold in European markets.

—A cable dispatch from Berlin says: "R. Knille, representing a mercantile agency of New York, has completed a tour through Germany. He reports that exports from the United States into Germany are increasing constantly, especially in the lines of furniture and fruits. About 300 commercial travelers from the United States are now in this empire trying to open up fresh channels of trade for American-made goods and are meeting with a reasonable measure of success."

KALAMAZOO RAILROAD VELOCIPEDE & CAR COMPANY, KALAMAZOO, MICH., U. S. A.

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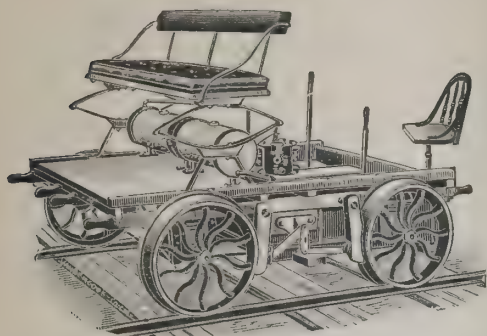
50 Different Styles LIGHT RAILWAY CARS,

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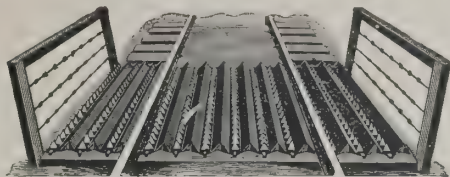
Our goods can be purchased through any responsible Commission House, or direct on BANK CREDIT.

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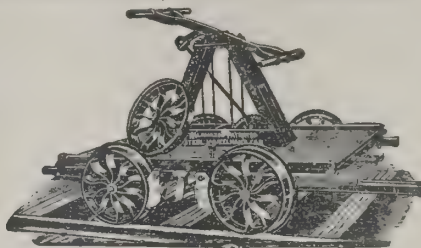
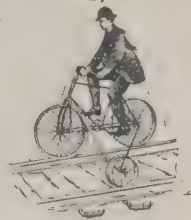
2 H. P. GASOLINE MOTOR INSPECTION CAR.

It has no fire exposed. It is free from any possibilities of explosion. It is ready to start at a moment's notice. Capacity, 2 or 3 inspectors. Rate of speed, 20 miles per hour.



STEEL SURFACE CATTLE GUARD.

The surest and safest Stock Turner in the market, consequently the cheapest.

STANDARD SECTION HAND CAR.
Net weight, 500 pounds.

RAILWAY "SAFETY."

Weight only 55 lbs. Ball bearings, and made throughout similar to road bicycle.

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PUMPS FOR ALL PURPOSES

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SECTIONAL VIEW



Showing Rivet divided in the centre after being set.



HAND SETT

PLAN OF CLINCH



Showing the full size of the No. 3 Harness Rivet.

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HAVE BEEN TESTED BY YEARS OF SERVICE IN THE UNITED STATES AND HAVE BEEN FOUND TO BE

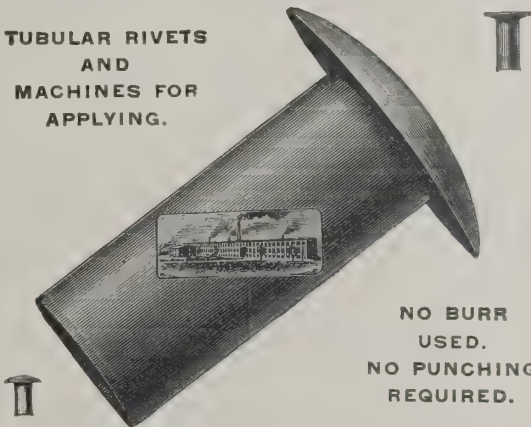
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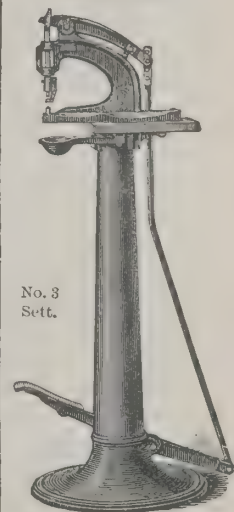
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WHO HAVE OCCASION TO MAKE A HARNESS OR MEND A BROKEN STRAP WILL FIND THEM INVARIABLE.

THESE RIVETS CUT THEIR OWN WAY THROUGH THE MATERIAL AND ARE TURNED ON THE UNDER-SIDE AT ONE OPERATION, MAKING THE WORK AS SECURE AS IF FASTENED WITH SOLID RIVETS.

Machines of superior style and finish to meet every requirement.



No. 3 Sett.

THE FALLS RIVET AND MACHINE COMPANY,

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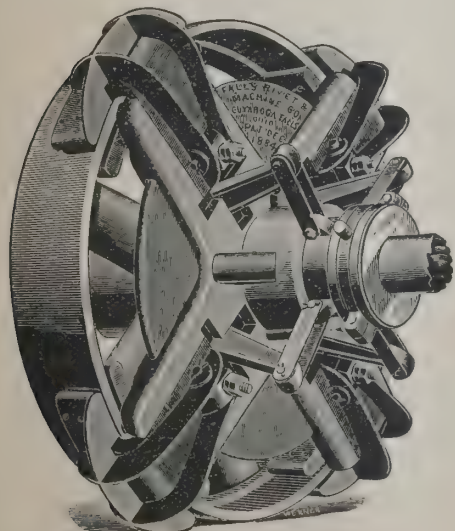
PULLEYS, SHAFTING, COUPLINGS, PILLOW BLOCKS, FRICTION CLUTCH PULLEYS, FRICTION CLUTCH COUPLINGS, Etc.,

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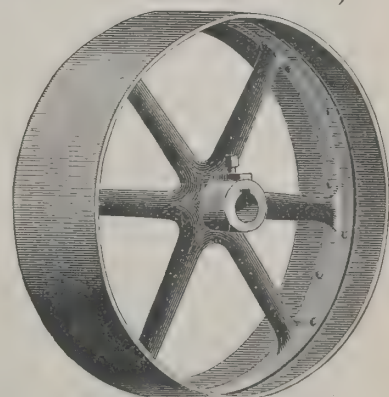
SEWER PIPE AND CLAY MACHINERY.

Our STEEL RIM PULLEYS are much stronger, better balanced and 30 PER CENT. LIGHTER than cast iron pulleys.

Illustrated Catalogue furnished on application. Correspondence invited.



Friction Clutch Cut-off Coupling.



PATENT STEEL RIM PULLEY.

Wood Pulp.

THE manufacture of wood pulp into vases, tiles, cornices, friezes, dadoes, interior decorations, hollow ware and numerous other household articles of an ornamental and useful nature, says the *Philadelphia Times*, is a new industry that has been the direct outcome of the discovery of making paper out of wood pulp. The value of our forests and the importance of preserving them has been preached to an unappreciative audience for twenty years, but at the very moment when the wooded areas of the country are on the point of complete extinction, a series of inventions and discoveries disclose to us the folly of wasting our natural resources. The lumber baron has no greater interests at stake than the conversion of the timber into money, and he denudes the forests with tremendous waste, with no idea of replanting; but the modern industry of paper making must look ahead in order to guard the capital invested in the business.

The decided tendency in certain quarters to adopt the Elizabethan architecture, with its ornate and richly carved decorations, has created a demand for some cheap raw material that can be readily decorated and handsomely finished. The interiors of our homes are becoming more elaborately carved and decorated, despite the craze for a pure colonial style, and the question of making attractively carved mantels, tiles, friezes, wainscotings, cornices, centrepieces and dadoes has puzzled builders considerably. Wood carving of an elaborate character may do for the expensive houses, but in small, tasteful cottages it would hardly answer the purpose. Something cheaper and yet nearly as effective has been sought in vain, until wood pulp, chemically hardened, entered the field and supplied the long-felt desideratum.

The leading qualities of the wood pulp show the superior value of this material for interior decoration. When chemically prepared the articles are waterproof and unaffected by acids or oils. There is no grain to the wood, and a small ornamental mold can be nailed to the wall or ceiling without danger of splitting. When trimmed and finished off the pulp offers the best surface possible for painting and decorating. By new chemical processes the pulp can be given a perfect china finish, with a fine glazed surface and a ceramic or Japanese enamel finish. It is also very susceptible to stains, and perfect imitations of oak, walnut, maple or cherry are easily and cheaply obtained. In all characteristics the new ware rivals earthenware, pottery and china, without their liability to breakage. A handsome vase or toilet article made of the prepared wood pulp can be dropped from the mantel with impunity by the careless servant girl, and it will neither chip, crack nor break. Ordinary usage has no effect upon the fine surface finish and ornaments, and they will endure service much longer than most other materials without losing their attractive appearance.

In interior decorations the ceiling and walls are made of plain or ornamented sheets of the wood pulp and screwed to the studding and rafters without the use of lath or plaster. The whole interior is thus made of beautiful panels, with a fine finish that can be decorated to suit the taste. The sheets can be made plain or embossed, and thick enough to take the place of plaster and paper. The glazed finish to the plain sheets is far preferable to painted walls. The wainscoting is made in the same way and the decorations and conventional patterns harmonize with the ceiling and walls. Such a wall is far more enduring than one of lath and plaster. There is no danger of breaking, and the wood fibre will not warp, twist, crack nor peel in changeable temperatures. The screws and nails can be driven in so close to the edge without splitting the wood that they are not noticeable.

The cornices, friezes, tiles and mantels are taken into the plain room and placed into position rapidly, giving a finish and decoration to the interior that are not obtained by any other method. Handsome imitations of wood-carved tiles and centrepieces deceive all but the expert, and the panelled walls and ceilings, with their colored or ceramic finish, are unequalled by the products of any other known process. The artist has a surface perfectly adapted for displaying his skill, and nothing short of expensively carved wood could give such results.

The decoration of furniture is equally facilitated by this new process of wood-fibre molding. The patterns are designed and hollow molds made after them. The wood fibre, while in a soft, gelatinous condition, is forced in the molds, and the moisture then slowly driven out by compressed air, while the meshes of a fine netting hold the pulp in place. The articles can be turned out in single pieces, and they are completed without further manipulation, except to trim and finish off the surface. Delicate scrolls, flowers and all conventional patterns commonly carved out of wood for furniture and cabinets are thus produced rapidly. With a little glue these ornamental pieces are fixed securely into position, and no one but an expert would know them from fine wood carved figures. A great deal of our modern furniture is thus elaborately decorated.

Vases and jardinières are made of wood fibre with a glazed surface, imitating in color and finish the expensive china, pottery and earthenware. Almost any finish can be given to the smooth surface, and hand painting can be as effectively performed on such vases as on the Dresden or Limoges ware. Brush backs and toilet articles of an infinite variety are produced by the same art, and also handsome album covers, caskets, table tops, trays and waiters. The limits to the new art are indefinite and hard to explain. With still further improvements along the present line, wood-pulp ware may make a complete revolution in our homes. It has already promised and fulfilled great things in interior decoration, but its application to the exterior parts of our houses may change modern architecture to such a degree that present styles will become antiquated.

Instead of building houses with siding boards and shingles, large sheets or panels of wood-pulp ware may be employed, giving a smoother and more enduring finish to the whole building. The outside ornamental work has already

been improved upon by the wood-pulp moldings and cornices. With the chemically hardened fibre and glazed surface, the outside sheets would be impervious to water without the addition of paint, and they would be far more enduring. The saving in waste would also be an item. The heart of a tree alone yields fine siding boards and the loss from trimming is considerable. Nearly all parts of the spruce tree are used to make pulp. Excepting the bark and knotty branches, the loss is exceedingly small.—*Canadian Manufacturer*.

American Stove in Paris.

"COAL in Paris is bric-à-brac," laughed a woman who is just home from a year's residence in the French capital, "and a stove, oh, a stove is a large article of vertu. When we began to freeze last Winter, which we did at the first cold weather, over the tiny grates set in a corner of the room where they will throw out the least heat, even when at their best, I announced that we must have a stove. There were three women of us doing Paris in lodgings, and the others agreed, commissioning me to act as purchaser. 'You will see a stove here to-night,' I said confidently, as we separated one morning. But they didn't. I travelled up and down before I could find any that fell in with my American ideas of a stove, and when finally I did find an approach to my standard I found its price, too. That was larger than the stove. Sixty dollars! Of course we couldn't pay that for a couple of months' use of a stove. I asked the dealer if he would rent it. After a parley he consented, but wanted \$5 a month. I reported the proceeding to my friends, and we decided to rent the stove. The Frenchman assured me the stove consumed 10 cents' worth of coal a day. Perhaps it did, with the fire kept at his conception of what a fire is for, but we plied that stove to its limit, and it ate up a dollar's worth of coal, at French rates, every 24 hours. Those who treasure notions that Paris is a cheap place of residence for Americans should keep out of it in Winter. They will find themselves bankrupt before Spring, and there will not have been one cold day that their apartments will be filled with a genial warmth such as pervades all our American rooms outside the most squalid homes."

Cast Wrought Iron.

A DISCOVERY which promises to revolutionize the iron trade has been made by an American manufacturer the effects of which will be far reaching and important. The process of manufacture is simple. The metal is made in an ordinary open-hearth furnace. Iron scrap of any kind is melted and poured into a mold of whatever shape may be desired from the same patterns as are used in ordinary castings, except that the shrinkage is one-quarter inch to the foot. The resultant iron has all the qualities of Swedish or Norway bar iron with a tensile strength of from 60,000 to 70,000 pounds per square inch of section. These castings will weld perfectly to themselves or to ordinary bar iron. The metal is extra tough and will take the place of forgings with perfect success. For gears it has no equal, and it is especially adapted for crank shafts. For electrical work, experts declare, there is no metal known that equals it for efficiency. The manufacturers claim that they have completely overcome the difficulty of porous castings and that the metal is soft, homogeneous, tough, and possesses all the good qualities of a forging and none of its defects. Castings weighing up to 4,000 pounds have been turned out in perfect shape and condition.

The North Star Power Plant.

ONE of the most interesting and notable examples of power development ever made in this country is the plant recently constructed for the North Star Company at Grass Valley, Cal., U. S. A., a brief description of which will be of interest.

The water supply is carried to the power station through a line of 20-inch pipe and delivered to the wheel under an effective head of 750 feet. A Pelton wheel 18 feet 6 inches diameter, of 300 horse-power capacity, is mounted on a 10 inch steel shaft connecting direct with a pair of compound compressors having a piston speed of 400 feet per minute. The air thus furnished is transmitted a distance of one mile through a 6-inch pipe, carrying a pressure of 90 pounds, and runs a pump and set of holsting works. Another pipe transmits air to the mill 4 miles distant, which is also operated by the same means.

The novelty of this application as well as the results obtained will attract wide attention.

THE strongest electric light in the world will soon cast its piercing rays seaward from the top of Barnegat lighthouse, on the New Jersey coast. It is of 2,500,000 candle power. The new light, it is claimed, can be seen at a distance of 30 nautical miles, and by reason of its great strength will be able to penetrate haze and fogs, and thus warn mariners that they are approaching a dangerous coast.

"EL ANUNCIADOR" has practically changed hands. Mr. J. L. Dumont and his son, H. K. Dumont, who established the paper and organized the Dumont Co. to publish the same, have sold out their entire interest in the publication and corporation and have started a new bicycle trade paper entitled, *The Universal*, with offices at 114 Nassau street, New York.

Mr. Dumont, Sr., has been for many years past a well-known export newspaper man. Previously to starting *El Anunciador* he was the American representative of the *Panama Star and Herald*. We wish him every success in his new undertaking.

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No. XXXX Press prints up to 10x15 inches. With 10 styles of type, ink, etc., \$125.00. Or if \$50.00 be added for small type, rules, etc., a newspaper may be printed with this outfit.

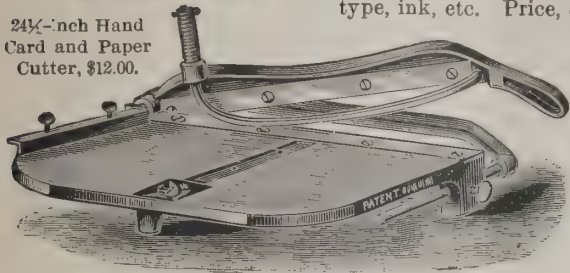
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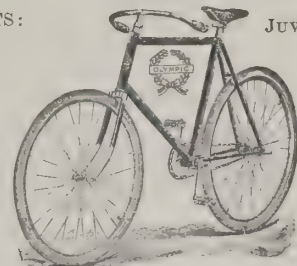
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The Cost of Incandescent Lighting.

WHEN Mr. Edison projected the first incandescent light station it was his aim to produce the electric light at a cost not to exceed gas. That these early attempts did not meet with immediate realization are matters of historical record, but in spite of this fact incandescent light from the very beginning advanced in public esteem in virtue of its intrinsic merit, which consumers have all along recognized by their willingness to pay for. But with improvements in lamps and methods of distribution the cost of incandescent lighting has been steadily lowered until a point has been reached where large consumers can be supplied with profit to the central station at a figure which puts the electric light in direct competition with gas on the basis of cost solely. As an example of this we need only refer to the rate prevailing in New York City, in which one large customer on the Edison circuits is supplied at .4 cent per lamp hour. These results have been accomplished with a 50-watt lamp; and as it is evident that higher economy lamps must inevitably displace those in present use, just as these drove the old 64 watt lamp to the wall, it is eminently timely to inquire just what would be the effect of the introduction of a 37½-watt 16 c. p. lamp; that is, one of 20 lamps to the horse power, with a life equal to that of the one in use at present. Mr. Edison has addressed such an inquiry to Prof. W. D. Marks.

Taking the Philadelphia Edison station, carrying 89,359 lamps attached, as a basis Prof. Marks shows that, other things being equal, incandescent lighting could be furnished at .43 cent per lamp hour, equivalent to gas at 86 cents per 1,000 cubic feet, and produce 15 per cent. on the invested capital of \$2,250,000. These figures are of a most interesting, not to say startling, nature, and present an argument and offer an incentive for higher economy lamps which will not be lost. Already 150 and 200 volt lamps have been making gradual headway abroad, and we think that in this direction, of high volt, high economy lamps will be found the solution of the problem, which will finally place the incandescent lamp beyond the field of competition with gas, if, indeed, it may not be deemed largely so already. There is nothing so effective in bringing home facts as a concrete example, and Mr. Edison and Prof. Marks deserve the thanks of the electrical community for bringing prominently into view not alone the objects to be striven for, but the profits awaiting the introduction of the 37½-watt lamp.

As regards the subject under discussion we may refer to a high economy lamp in which a niobium filament is employed. It may be argued that the rarity of the metal employed and its seeming high cost of manufacture precluded such a lamp from practical consideration, but we may recall the fact that Mr. Edison spent years and a fortune in quest of the proper vegetable fibre used by him, and also that lamps once sold by him for \$1 can now be had for 18 cents and less.—*The Electrical Engineer.*

Metals Made from Alloys.

IT is not generally known that—

- Bath metal is made from tin and copper.
- Bell metal results from zinc and copper.
- Bronze is the product of copper and tin.
- Britannia ware is made from copper, bismuth and antimony.
- Dutch gold is made from copper and zinc.
- German silver is composed of zinc, nickel, copper and a little iron.
- Standard gold is made from gold and copper.
- Copper and tin form gun metal.
- Mosaic gold is a combination of copper and zinc.
- Pewter is made from lead and tin.
- Sheet metal is composed of lead and a small quantity of arsenic.
- Standard silver is made from silver and copper.
- Solder is made from tin and lead.
- Type metal is the combination of antimony and lead.
- White copper is made from copper and arsenic.

NEVER was there so favorable a time as at present for American shoe manufacturers to seek business in South America. The people of the various countries there are most favorably inclined toward goods made in the United States and will buy them in preference to those produced elsewhere. Our manufacturers can make shoes suited for all parts of North America. Why not for South America? It only needs a knowledge of the styles wanted, manner of shipment and a few other details. There is a big business awaiting the enterprising shoe manufacturers who will take the time and spend the money necessary to prepare themselves for it.

—The Central and South American States are developing a greater interest in the United States because of our fatherly regard for them and their hatred of the oppression of foreign countries, which barely respect their rights. A large portion of the trade of these countries can be controlled by our merchants and manufacturers, and favorable opportunities are arising through better facilities for intercourse by which we can extend and strengthen our trade connections.

—Half a dozen firms at Cincinnati, Ohio, U. S. A., have consented to send to Russia next April a representative to introduce their machinery. Two of the syndicate make wood-working machinery, and the other five or six, brass fixtures, ironworking tools, twist drills and pumps and presses. Nearly all of these firms have sold to Russians, who will always purchase American-made goods in preference to European work, if they can get it. It is to provide for quick, reliable delivery, and to increase the sales that a special agent is to be sent.

New Announcements.

THE attention of our readers is called to the advertisement of The McCurdy Manufacturing Company, Cincinnati, O., U. S. A. This company desires to extend its trade in foreign countries and is prepared to furnish any of their carriages for export at the lowest prices consistent with good quality. They will be pleased to hear from foreign buyers direct or through their American agents.

THE TREVOR MANUFACTURING COMPANY, Lockport, N. Y., U. S. A., have placed an advertisement of their machines for making shingles, barrel heads and staves, cheese boxes, etc., also machines for making tool handles and for grinding wood into pulp for the manufacture of paper, in this publication with a view to establishing a foreign demand for the same. These machines are highly spoken of.

THE announcement of the Chester F. Korn Manufacturing Company, Cincinnati, O., U. S. A., will be found in this issue, and as they make high-grade passenger carriages for both the domestic and export trade, interested importers of such vehicles will no doubt be pleased to improve acquaintance with them by writing for catalogue and prices.

Notes of Interest.

—Rand Drill Co. have removed its New York office from 23 Park Place, to the American Surety Building, 100 Broadway, New York City.

—Contracts have been placed with the Middletown Car Works, Middletown, Pa., U. S. A., for the construction of 250 cars, 50 of which will go to Mexico.

—Nearly the entire continent of Europe receives its supply of oleomargarine from New York and Chicago, and the importation is always through Rotterdam.

—The Dow Steam Pump Works, of San Francisco, Cal., U. S. A., have lately completed a large special duplex power pump for Central America, also one for Chili.

—The United States now controls the world's iron trade, producing about 11,000,000 tons annually. England, the former mistress of the trade, produces only 6,709,000 tons.

—Canada's trade with the United States last year was greater than with Great Britain. Canadian imports from the latter fell off \$7,500,000 and from the United States increased \$1,500,000.

—American-made carriage woodwork is recognized the world over as the best made. Our manufacturers ship this material to all parts of the world and their foreign business increases each year.

—A Stonington, Conn., machinery company has just shipped 20 tons of silk machines to Moscow, Russia, and about three times as much is to go to the same place, where a large silk mill has been erected.

—The L. M. Rumsey Manufacturing Company, St. Louis, Mo., U. S. A., have lately made quite a number of good shipments to Mexico, including some large bills of engines, boilers and agricultural machinery.

—American fisheries are an inexhaustible source of wealth. The State of Maine leads the world on lobsters and clams and also has exceedingly productive inland fisheries. Its yearly income from fisheries is about \$3,000,000.

—The Orient Electric Company, Youngstown, Ohio, U. S. A., have received a big order through a New York exporter for incandescent electric lamps for Russia, for which, it is said, they will be kept working overtime for three months.

—Wonderful accuracy in scales. Scales are now made so accurate that they will weigh a small pencil mark on paper. A signature containing nine letters has been weighed and proved to be the fifteen thousand five hundredth part of an ounce, troy weight.

—As wood is largely wanting in the Australian gold fields, several steamships are engaged in carrying timber from the Pacific Coast for use in the Australian mines. The steamships carry from 2,000,000 to 2,500,000 feet each. The wood is California pine and fir.

—We have received from the Rand Drill Company, 23 Park Place, New York, a catalogue printed in the Spanish language, describing and illustrating their rock drills, air compressors and other machinery used in mining. It is sent to those interested on application, and is 6¼x10 inches.

—In selecting a lubricator for a steam engine it is well to get one which is so constructed that when it must be filled the cylinder oil will go directly into the cup without having to go through a long, crooked passage, for many good oils are thick, and it is not always convenient to warm an oil before using it.

—The Niagara Stamping and Tool Company, manufacturers of tools and machines for sheet-metal workers, Buffalo, N. Y., U. S. A., have issued a new catalogue devoted exclusively to their shears for sheet metal, squaring, rotary, hand and lever power. In addition to the tools illustrated in the above edition they manufacture a complete line of tinsmiths' tools and machinery and special machines for sheet metal work.

—August H. Schierholz, San Francisco, Cal., U. S. A., has invented an ore crusher, which is a strong and simply constructed machine, to facilitate the crushing, pulverizing and amalgamation of ores, and comprises a pan in which the crushing rollers are adapted to travel, the rollers being journaled in a frame, while a driving arm engages blocks held vertically adjustable on the frame to permit the rollers to move up or down according to the material under treatment.

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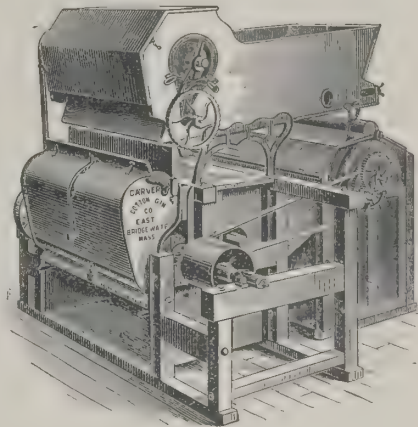
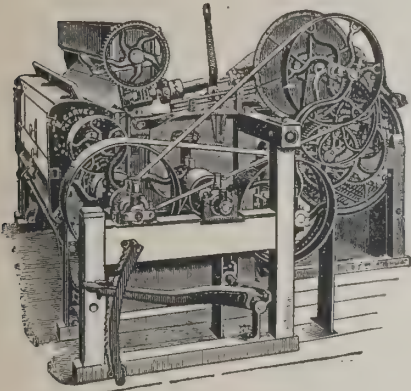
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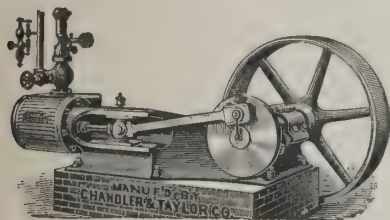
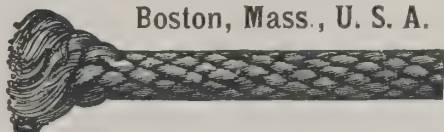
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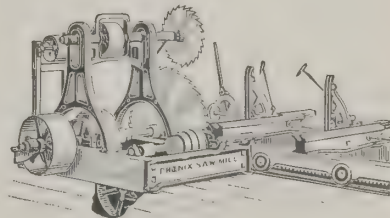
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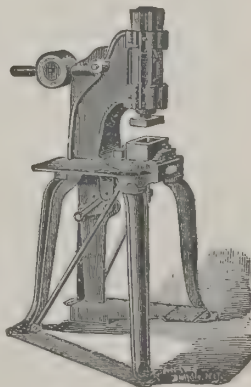
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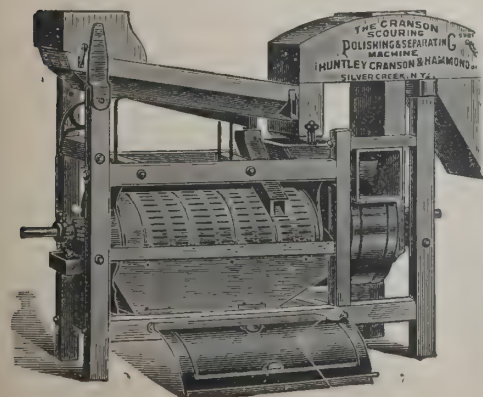
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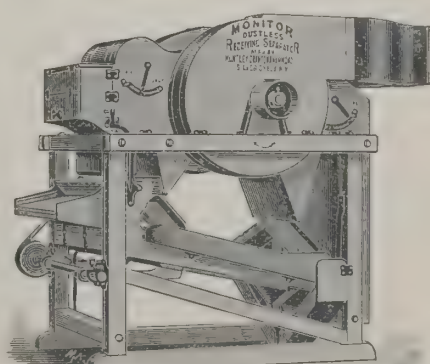
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MONITOR GRAIN SEPARATOR.

FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina-tions.	Where used.	American equivalent.	Denomina-tions.	Where used.	American equivalent.	Denomina-tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry) ..	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	214 inches.
Arobe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1 C11 pounds.	do.....	Uruguay (double) ..	7.776 bushels.	do.....	China, Japan and Sumatra.	133 1/4 pounds.
Arroba (dry) ..	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	Fanega (liquid)	Spain.....	16 gallons.	do.....	Philippine Islands	140 pounds.
do.....	Portugal.....	32.38 pounds.	Peddán.....	Egypt.....	1.03 acres.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Spain.....	25.38 pounds.	Frail (raisins).	Spain.....	50 pounds.	do.....	Castilian.....	0.91407 foot.
do.....	Venezuela.....	25.4024 pounds.	Frasco.....	Argentine Republic	2.5096 quarts.	Pik.....	Turkey.....	27.9 inches.
Arroba (liquid).	Cuba, Spain and Venezuela.	4.263 gallons.	do.....	Mexico.....	2.5 quarts.	Pood.....	Russia.....	36.112 pounds.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	Pund (pound).	Denmark, Sweden...	1.102 pounds.
Arshine (squ're).	do.....	5.44 square feet.	Garnice.....	Russian Poland	0.88 gallon.	Quarter.....	Great Britain.....	8.252 bushels.
Artel.....	Morocco.....	1.12 pounds.	Gram.....	Metric.....	15.432 grains.	do.....	London (coal).....	36 bushels.
Baril.....	Argentine Republic and Mexico.	20.0787 gallons.	Hectare.....	do.....	2.471 acres.	Quintal.....	Argentine Republic	101.42 pounds.
Barrel.....	Malta (customs) ..	11.4 gallons.	Hectolitre:	do.....	2.838 bushels.	do.....	Brazil.....	130.06 pounds.
do.....	Spain (raisins) ..	100 pounds.	Dry.....	do.....	26.417 gallons.	do.....	Castile, Chile, Mex-ico and Peru.	101.61 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Liquid.....	do.....	1.422 acres.	do.....	Greece.....	123.2 pounds.
Bongkal.....	India.....	832 grains.	Joch.....	Austria-Hungary...	4 yards.	do.....	Newfoundland (fish)	112 pounds.
Bonw.....	Sumatra.....	7,006.5 squ're metres.	Ken.....	Japan.....	2.2046 pounds.	do.....	Paraguay.....	100 pounds.
Bu.....	Japan.....	0.1 inch.	Kilogram (kilo)	Metric.....	0.621376 mile.	do.....	Syria.....	125 pounds.
Butt (wine) ..	Spain.....	140 gallons.	Kilometre.....	do.....	216 cubic feet.	do.....	Metric.....	220.46 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Klafter.....	Russia.....	5.13 bushels.	do.....	Palestine.....	6 pounds.
Candy.....	India (Bombay) ..	529 pounds.	Kota.....	Japan.....	3.5 bushels.	do.....	Syria.....	5 1/4 pounds.
do.....	India (Madras) ..	500 pounds.	Korree.....	Russia.....	85.134 bushels.	Rottle.....	Russia.....	7 feet.
Cantar.....	Morocco.....	113 pounds.	Last.....	Belgium, Holland.	82.52 bushels.	do.....	Malta.....	490 pounds.
do.....	Syria (Damascus) ..	575 pounds.	do.....	England (dry malt).	2 metric tons (4,480 pounds.)	Sagen.....	Japan.....	3.6 feet.
do.....	Turkey.....	124.7086 pounds.	do.....	Germany.....	112.29 bushels.	Salm.....	India.....	1 pound 13 ounces.
Cantaro, Cantar.	Malta.....	175 pounds.	do.....	Prussia.....	113 1/2 bushels.	Se.....	Japan.....	10 inches.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Russian Poland.....	4,760 pounds.	Seer.....	do.....	1.6 quarts.
Catty.....	China.....	1.333 1/4 (1 1/3) pounds.	do.....	Spain (salt).....	4,633 acres.	Shaku.....	Standard (St. Petersburg).	165 cubic feet.
do.....	Japan.....	1.31 pounds.	League (land) ..	Paraguay.....	2.115 feet.	Sho.....	British.....	14 pounds.
do.....	Suva, Siam, Malacca	1.35 pounds.	Li.....	China.....	7.100 grains (troy).	Stone.....	Uruguay.....	2,700 cuadras (see cua-dra)
do.....	Sumatra.....	2.12 pounds.	Libra (pound) ..	Castilian.....	1.0127 pounds.	Suerte.....	Cochin China.....	590.75 grains (troy).
Centaro.....	Central America.	4.2631 gallons.	do.....	Argentine Republic	1.043 pounds.	Tael.....	Japan.....	0.25 acre.
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Central America....	1.014 pounds.	Tan.....	do.....	2 pcks.
do.....	Darmstadt.....	110.24 pounds.	do.....	Chile.....	1.0161 pounds.	To.....	Space measure ..	40 cubic feet.
do.....	Denmark, Norway...	110.11 pounds.	do.....	Cuba.....	1.0145 pounds.	Ton.....	Denmark.....	3.94783 bushels.
do.....	Nuremberg.....	112.43 pounds.	do.....	Mexico.....	1.0143 pounds.	Tonde (cereals)	do.....	1.36 acres.
do.....	Prussia.....	113.44 pounds.	do.....	Peru.....	1.011 pounds.	Tondeland.....	Japan.....	6 feet square.
do.....	Sweden.....	93.7 pounds.	do.....	Portugal.....	1.0143 pounds.	Tsubo.....	China.....	1.41 inches.
do.....	Vienna.....	123.5 pounds.	do.....	Uruguay.....	1.0161 pounds.	Tsun.....	Sweden.....	4.5 bushels.
do.....	Zollverein.....	110.24 pounds.	do.....	Venezuela.....	1.0567 quarts.	Tunna.....	do.....	1.22 acres.
Chih.....	China.....	220.46 pounds.	Litre.....	Metric.....	1.1 pounds.	Tunnland.....	Argentine Republic	34.1208 inches.
Coyan.....	Sarawak.....	3,068 pounds.	do.....	Greece.....	1.0791 pounds.	do.....	Castile.....	0.914117 yard.
do.....	Siam (Koyan).....	2,467 pounds.	do.....	Guiana.....	Squ're, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	do.....	Central Amer.ca...	38.874 inches.
Cuadra.....	Argentine Republic	4.2 acres.	Load.....	England (timber) ..	1.0791 pounds.	do.....	Chile and Peru.....	33.387 inches.
do.....	Paraguay.....	78.9 yards.	Manzana.....	Costa Rica.....	1 1/8 acres.	do.....	Cuba.....	33.384 inches.
do.....	Paraguay (square) ..	8,077 square feet.	Marc.....	Bolivia.....	0.507 pound.	do.....	Curacao.....	33.375 inches.
do.....	Uruguay.....	Nearly 2 acres.	Maund.....	India.....	82 1/2 pounds.	do.....	Mexico.....	33 inches.
Cubic metre.....	Metric.....	35.3 cubic feet.	Metre.....	Metric.....	39.37 inches.	do.....	Paraguay.....	34 inches.
Cwt. (hundred-weight.)	British.....	112 pounds.	Mil.....	Denmark.....	4.68 miles.	do.....	Venezuela.....	33.384 inches.
Dessiatine.....	Russia.....	2.6997 acres.	do.....	Denmark (geograph-ical.)	4.61 miles.	Vedro.....	Russia.....	2,707 gallons.
do.....	Spain.....	1.599 bushels.	Morgen.....	Prussia.....	0.63 acre.	Verges.....	Isle of Jersey.....	71.1 square rods.
Drachme.....	Greece.....	Half ounce.	Oke.....	Egypt.....	2.7225 pounds.	Verst.....	Russia.....	0.663 mile.
Dun.....	Japan.....	1 inch.	do.....	Greece.....	2.84 pounds.	Vlocka.....	Russian Poland.....	41.98 acres.
Egyptian wts. and measures.	(See CONSULAR RE-PORTS No. 144.)		do.....	Hungary.....	3.0817 pounds.			
Fanega (dry) ..	Central America ..	1.5745 bushels.						

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes-ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.808 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.

Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.)
Metre equals 39.37 inches.
Decametre (10 metres) equals 393.7 inches.
Hectometre (100 metres) equals 328 feet 1 inch.
Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10 inches).

Myriametre (10,000 metres) equals 6.2137 miles.

Metric surface measures.

Centare (1 square metre) equals 1.550 square inches.
Are (100 square metres) equals 119.6 square yards.
Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.

Length.	Surface.	Capacity.	Weight.	Notation.
Myriametre.....	Hectare.....	Hectolitre.....	Metric ton.....	1,000,000
Kilometre.....	Hectare.....	Hectolitre.....	Quintal.....	100,000
Hectometre.....	Hectare.....	Hectolitre.....	Myriagram.....	10,000
Decametre.....	Decare.....	Decalitre.....	Kilogram.....	1,000
METRE.....	ARE.....	LITRE.....	Hectogram.....	100
Decimetre.....	Centiare.....	Decilitre.....	Decagram.....	10
Centimetre.....	Centiare.....	Centilitre.....	Centigram.....	0.1
Millimetre.....	Milliare.....	Millilitre.....	Milligram.....	0.01

EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.

1 kilometre.....	0.62137 mile.	1 mile.....	1.60935 kilometres.
1 metre.....	3.28083 feet.	1 yard.....	0.914402 metre.
1 centimetre.....	0.3937 inch.	1 foot.....	0.304801 metre.
1 hectare.....	2.471 acres.	1 inch.....	25.4001 millimetres.
1 are.....	119.6 square yards.	1 square mile.....	2.59 square kilometres.
1 metric ton.....	2,204.62 pounds.	1 acre.....	0.4047 hectare.
1 kilogram.....	2.20462 pounds.	1 square foot.....	9.29 square decimetres.
1 gram.....	15.43236 grains.	1 pound.....	0.453 59 kilogram.
1 hectolitre.....	2.8377 bushels.	1 grain.....	64.7989 milligrams.
1 hectolitre.....	26.417 gallons.	1 bushel.....	0.35239 hectolitre.
1 litre.....	1.0567 quarts.	1 gallon.....	3.78543 litres.
1 stere.....	1.308 cubic yards.	1 cubic foot.....	0.02832 cubic metre.

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.
Millimetres $\times 25.4$ = inches.
Centimetres $\times 0.3937$ = inches.
Centimetres $\times 2.54$ = inches.
Metres $\times 39.37$ = inches. (Act Congress.)
Metres $\times 3.281$ = feet.
Metres $\times 1.094$ = yards.
Kilometres $\times 0.621$ = miles.
Kilometres $\times 1.6093$ = miles.
Kilometres $\times 3,280.7$ = feet.
Square millimetres $\times 0.0155$ = sq. inches.
Square millimetres $\times 645.1$ = sq. inches.
Square centimetres $\times 0.155$ = sq. inches.

Square centimetres $\times 6.451$ = sq. inches.
Square metres $\times 10.764$ = sq. feet.
Square kilometres $\times 247.1$ = acres.
Hectare $\times 2.471$ = acres.
Cubic centimetres $\times 16.383$ = cubic inches.
Cubic centimetres $\times 3.69$ = fl. drams.
Cubic centimetres $\times 29.57$ = fluid oz. (U. S. P.)
Cubic metres $\times 35.315$ = cubic feet.
Cubic metres $\times 1.358$ = cubic yards.
Cubic metres $\times 264.2$ = gallons (231 cu. in.)
Litres $\times 61.022$ = cubic in. (Act Congress.)
Litres $\times 33.84$ = fluid ounces (U. S. Phar.)
Litres $\times 0.2642$ = gallons (231 cu. in.)
Litres $\times 3.78$ = gallons (231 cu. in.)

Litres $\times 28.316$ = cubic feet.
Hectolitres $\times 3.531$ = cubic feet.
Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)
Hectolitres $\times 0.131$ = cubic yards.
Hectolitres $\times 26.42$ = gallons (231 cu. in.)
Grams $\times 15.432$ = grains. (Act Congress.)
Grams $\times 981$ = dynes.
Grams (water) $\times 29.57$ = fluid ounces.
Grams $\times 28.35$ = ounces avoirdupois.
Grams per cu. cent. $\times 27.7$ = lbs. per cu. in.
Joule $\times 0.7373$ = foot pounds.
Kilograms $\times 2.2046$ = pounds.
Kilograms $\times 35.3$ = ounces avoirdupois.
Kilograms $\times 1,102.3$ = tons (2,000 lbs.)

Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Kilogram-metres $\times 7.233$ = foot lbs.
Kilo per metre $\times 0.672$ = lbs. per foot.
Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Kilo per cheval $\times 2.235$ = lbs. per H. P.
Kilowatts $\times 1.34$ = horse-power.
Watts $\times 748$ = horse-power.
Watts $\times 0.7373$ = foot pounds per second.
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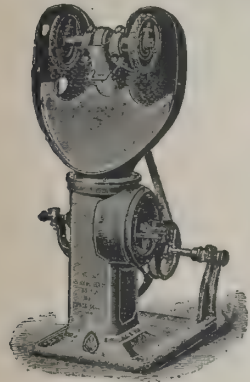
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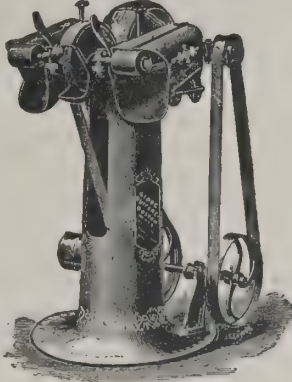
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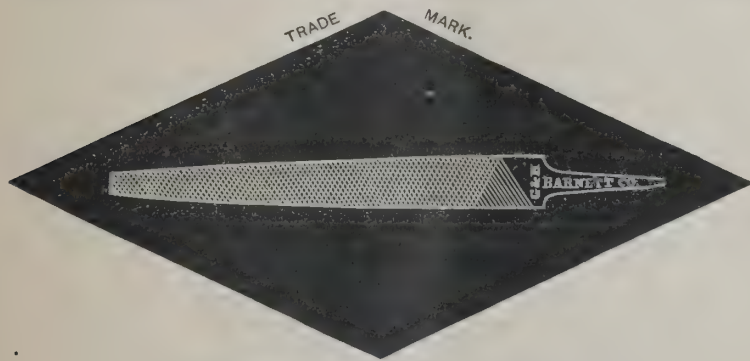
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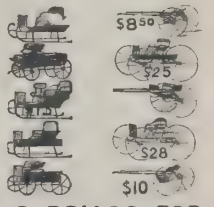
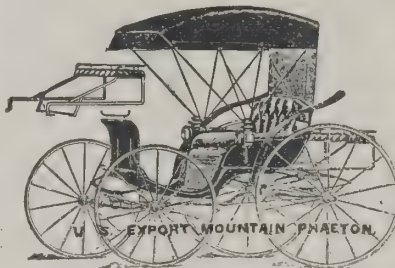
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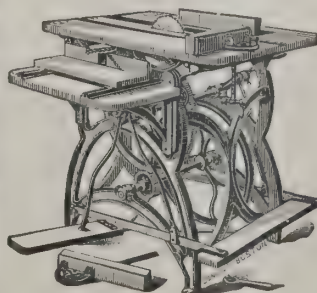
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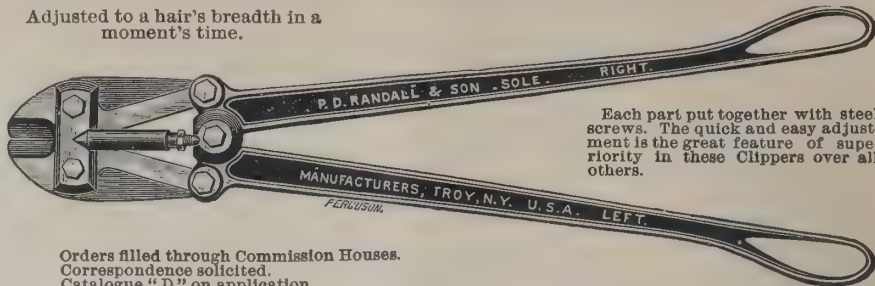
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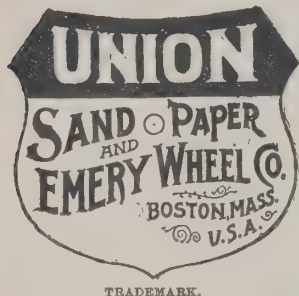
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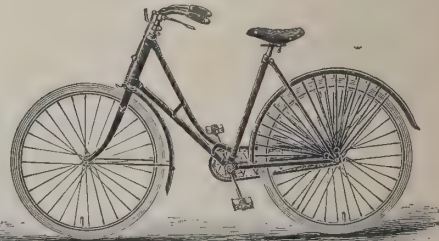


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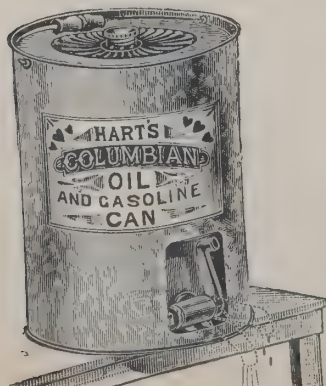
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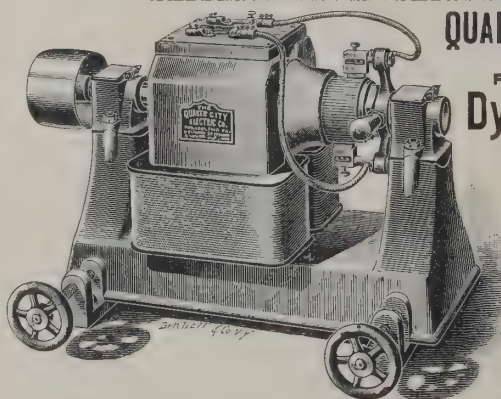
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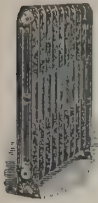
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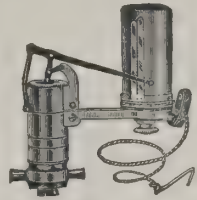
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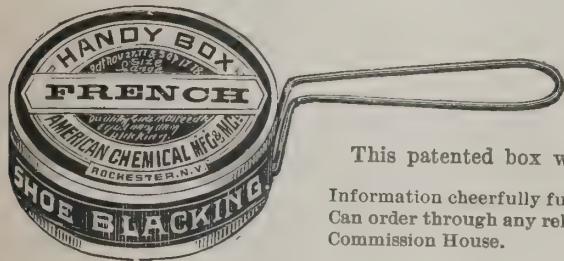
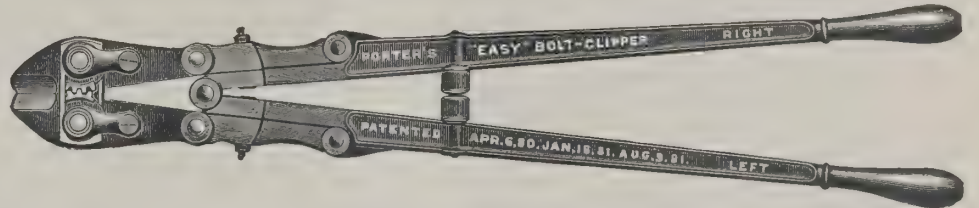
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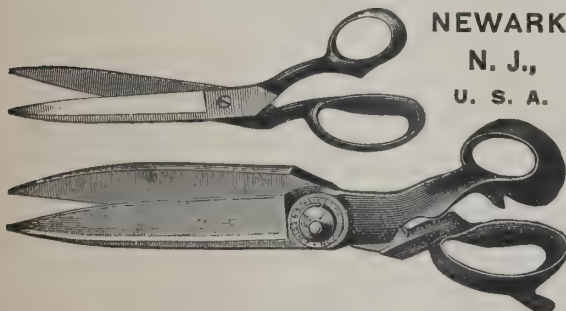
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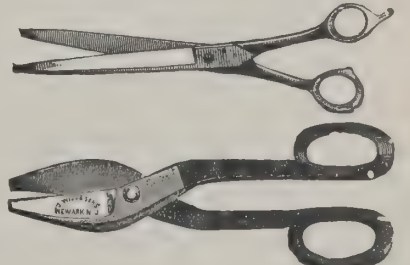
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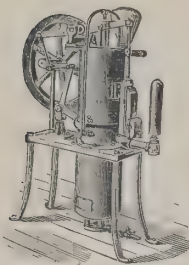
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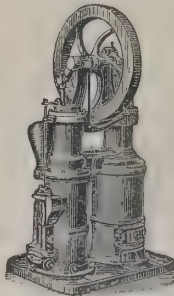
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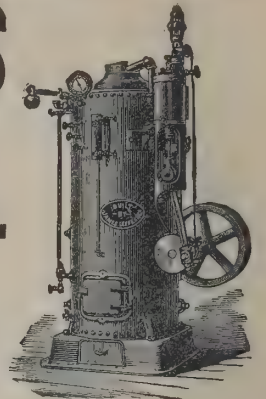
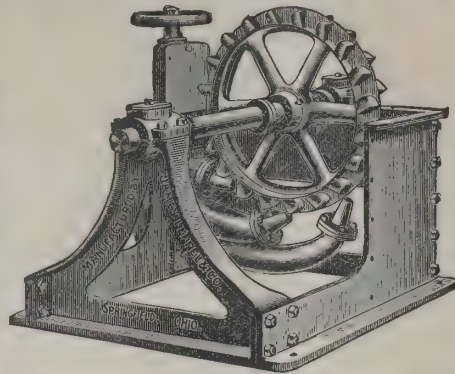
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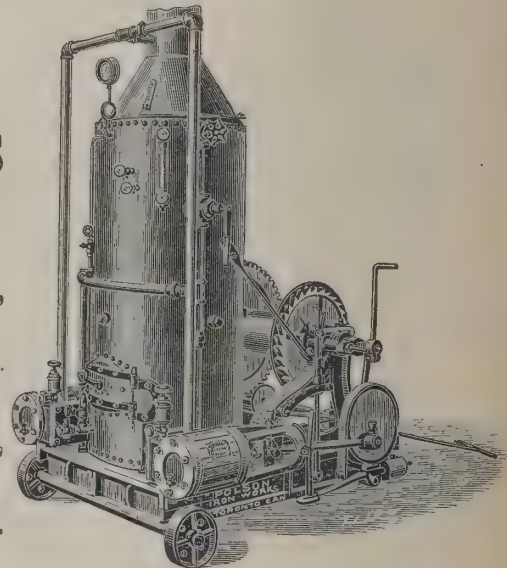
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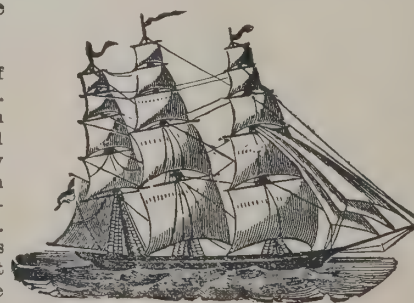
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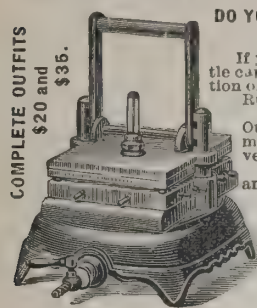
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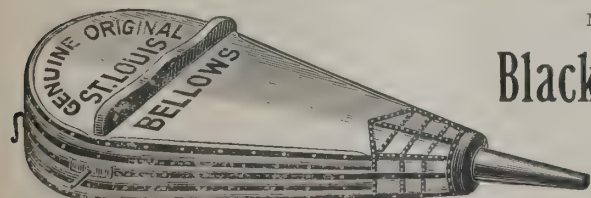
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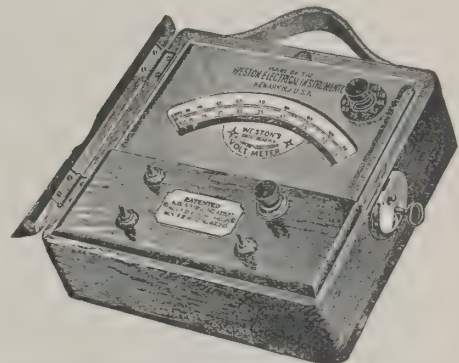
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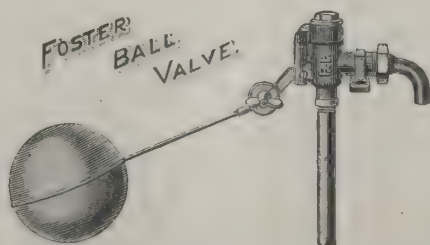
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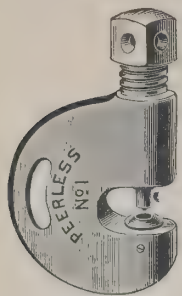
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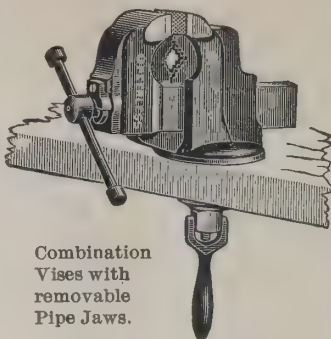
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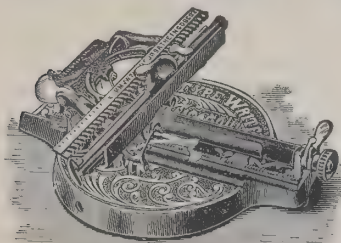


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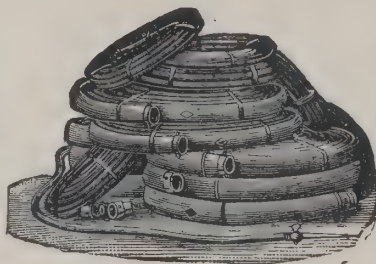
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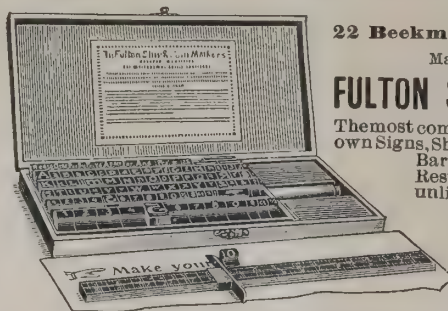
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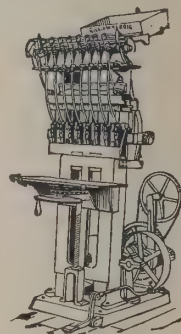
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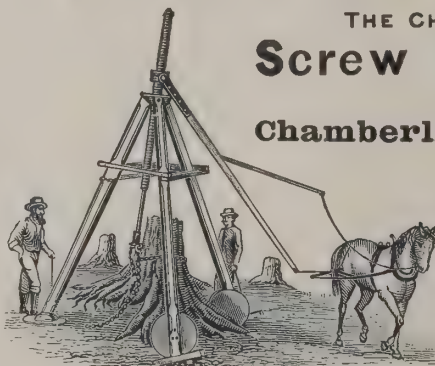
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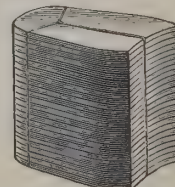
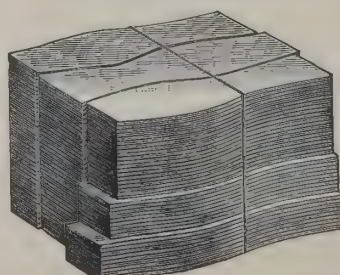
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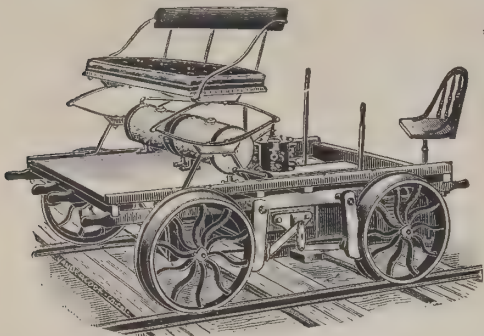
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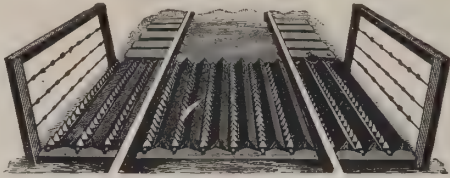
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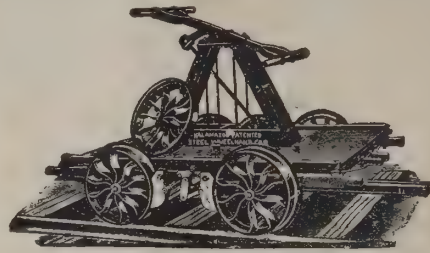
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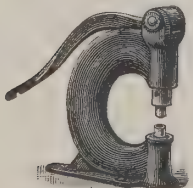
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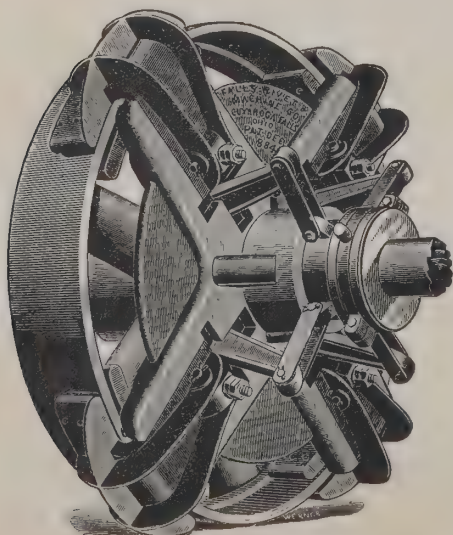
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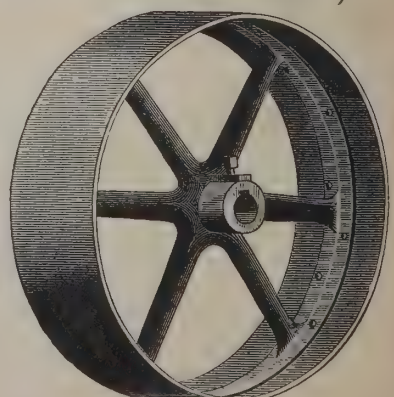
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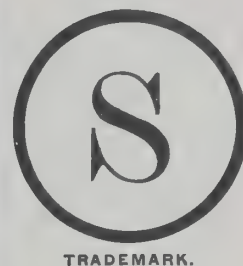
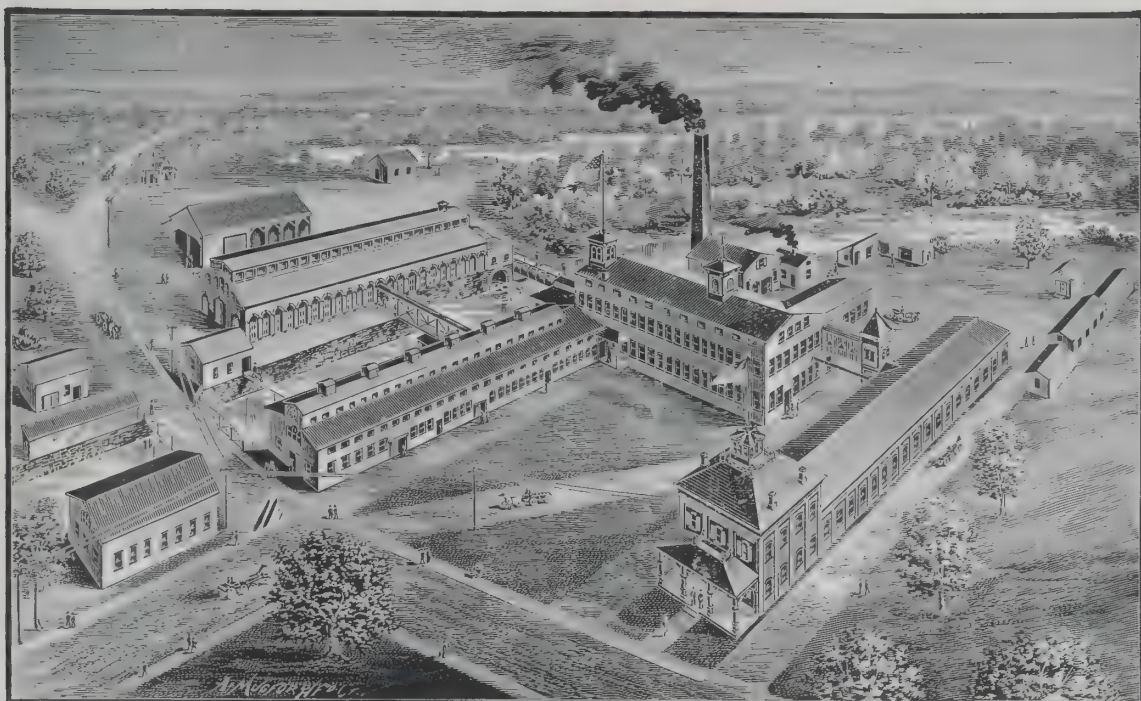
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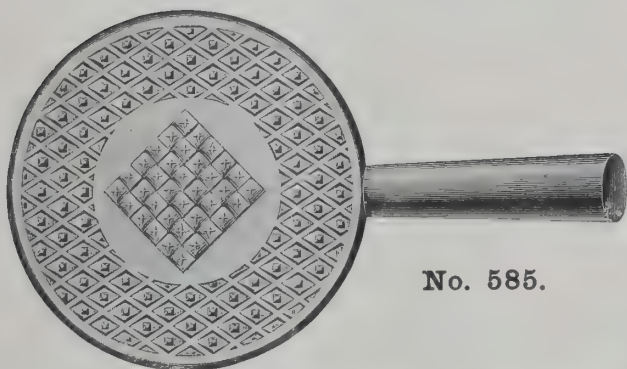
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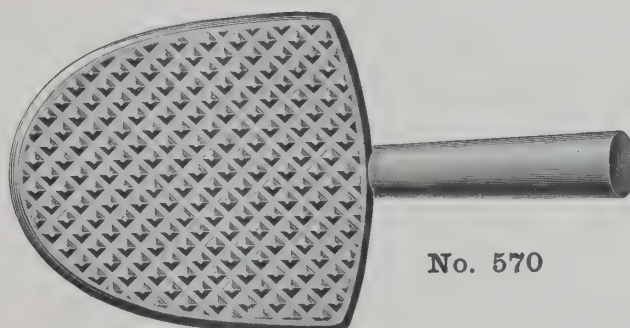
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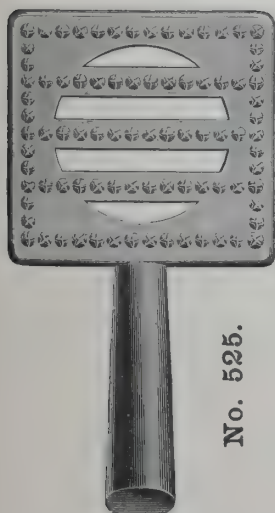
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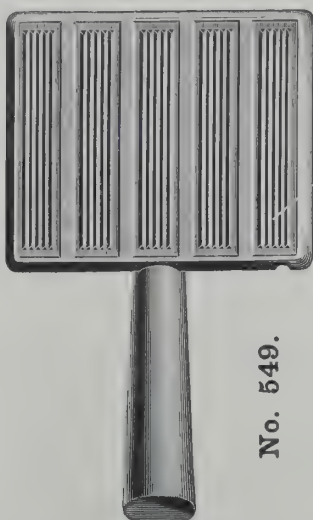
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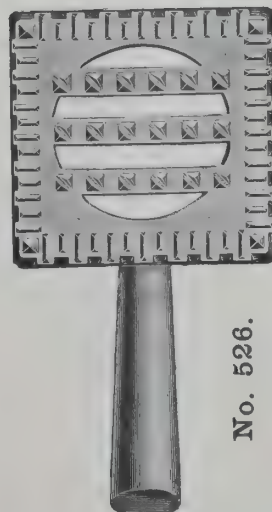
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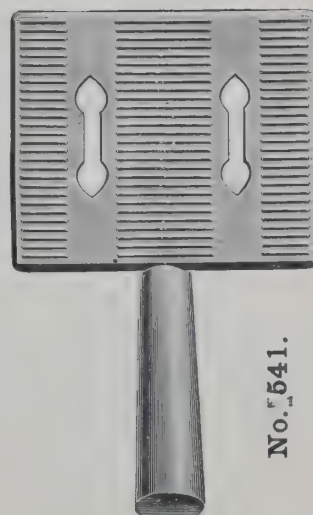
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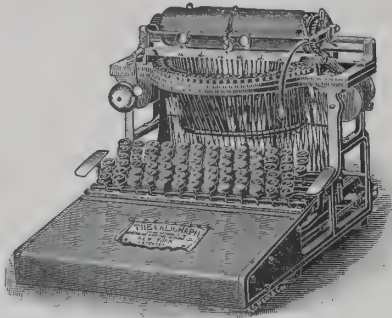
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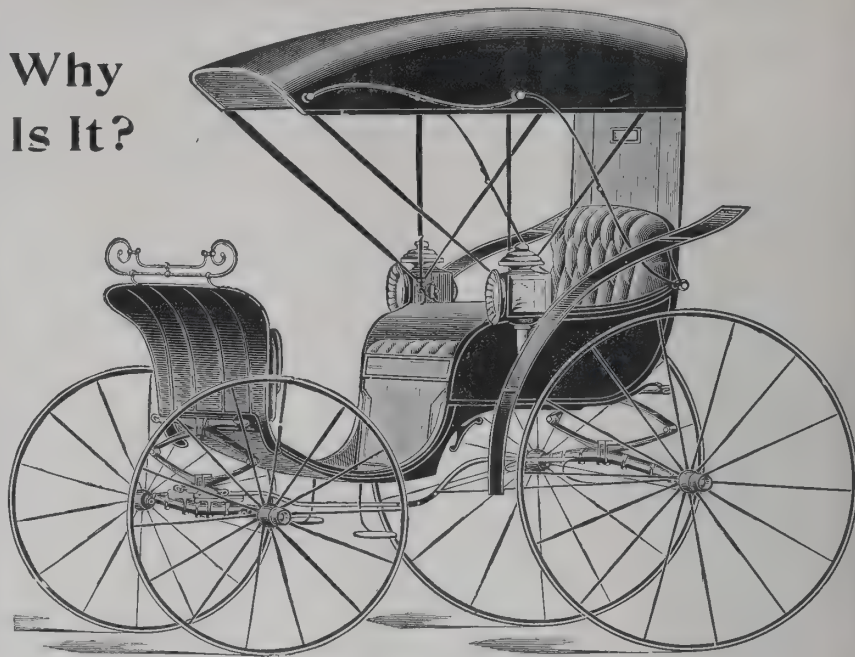
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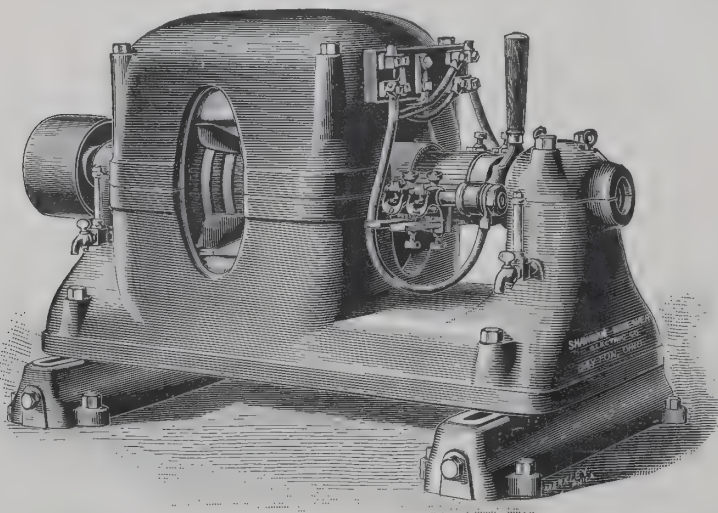
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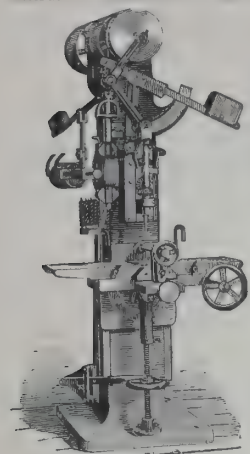
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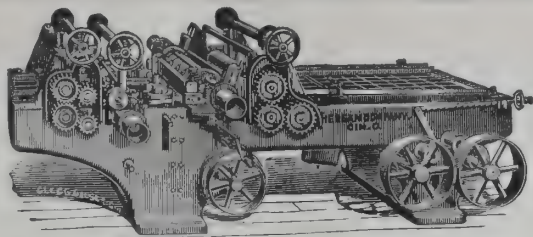
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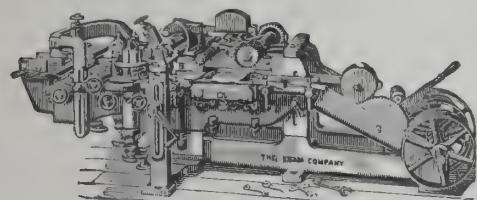


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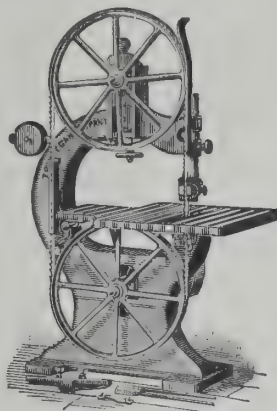


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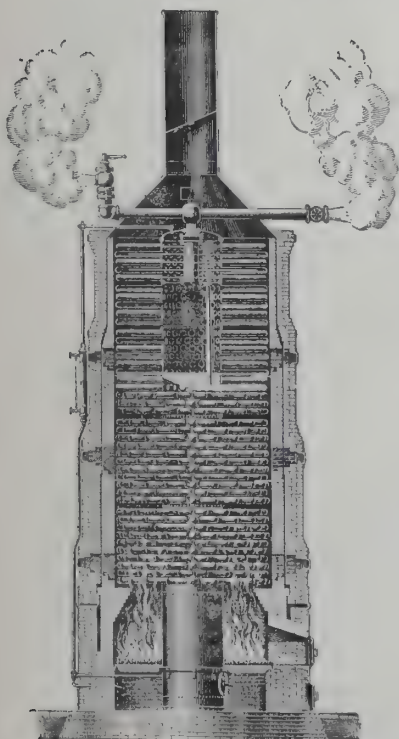
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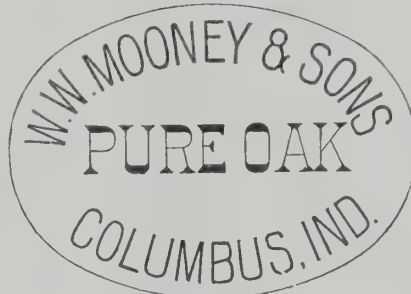
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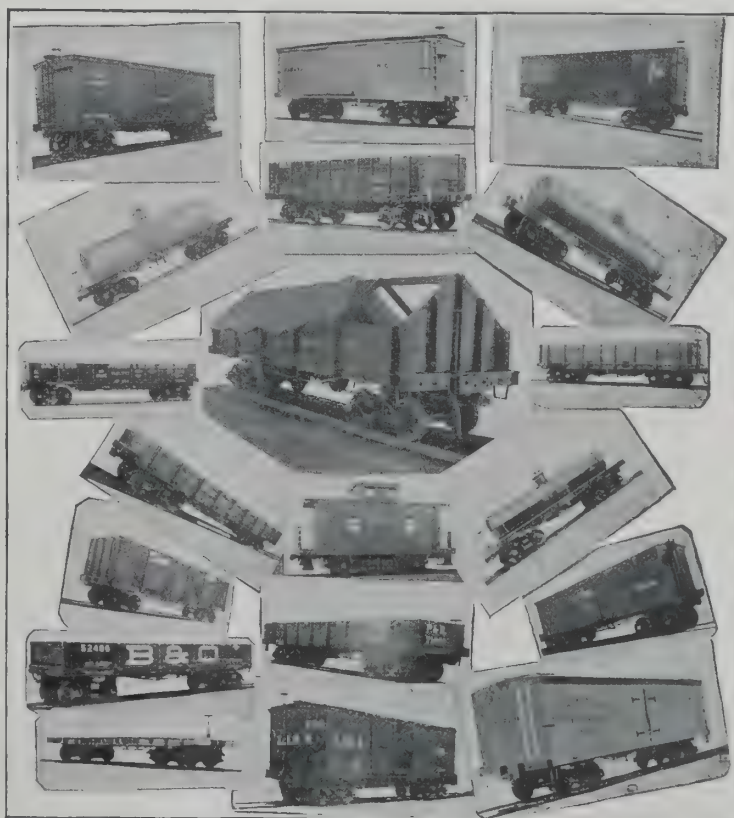
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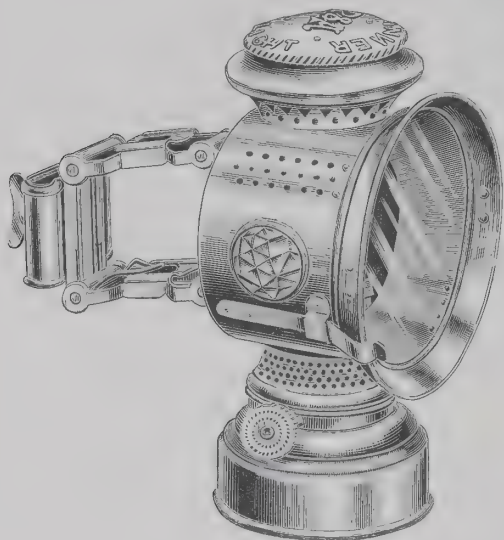
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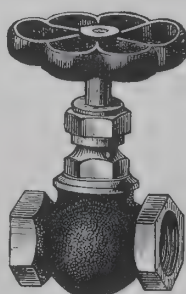
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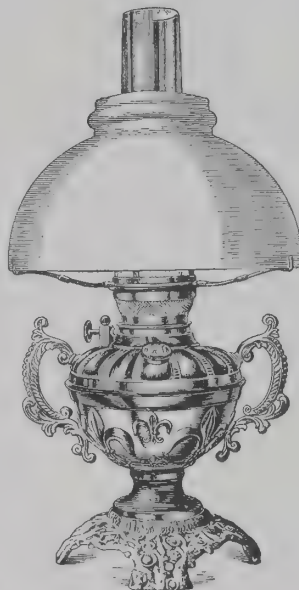
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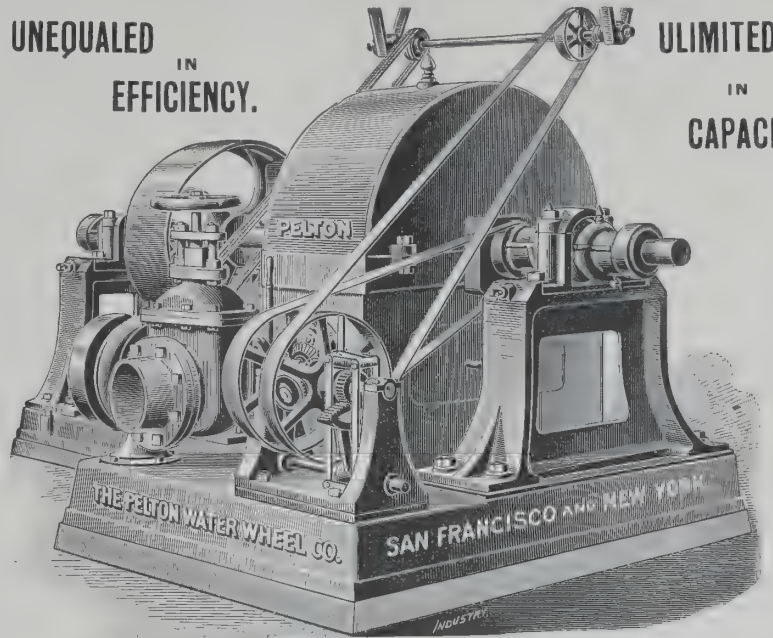
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STRONG and
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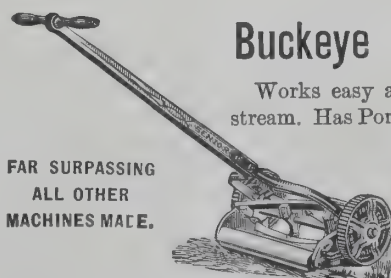
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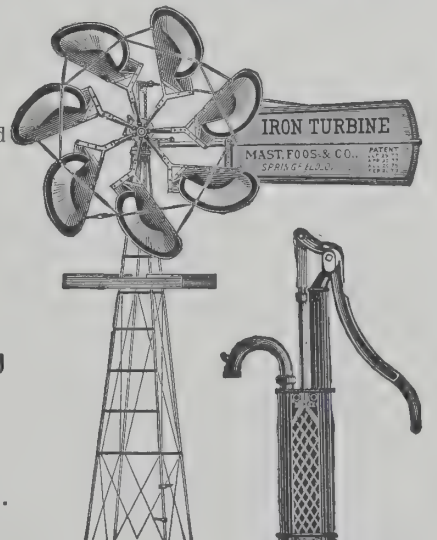
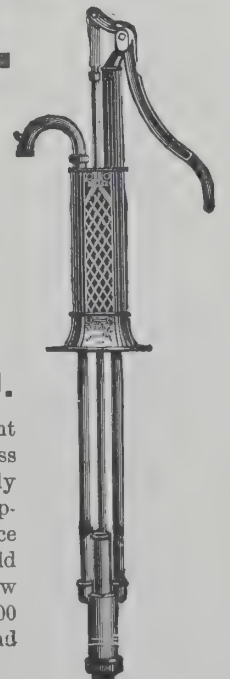
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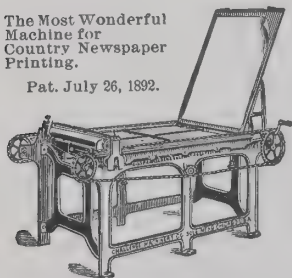
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One Dozen Lamps and Shade Holders in Package, Gross weight, 75 pounds; net weight, 32 pounds measurement, 13 1/4 cubic feet. Price, nickel finish (Lamp and Shade Holder), per dozen, \$11.80 net. Price, Decorated Shades, \$5.50 net. Package charge, 60 cents. Freight prepaid to New York.

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The press runs so easily that a boy or girl of fifteen can operate it. It occupies least floor space. It is the fastest hand cylinder made. It is lightest, although built of iron and steel.

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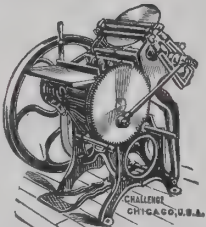
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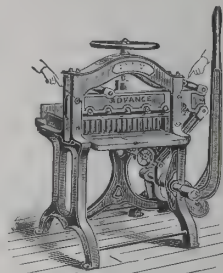
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For polishing patent leather
shoes quickly and with-
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Best Dressing put up at this price, and
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Produces a lasting lustre.

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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	Diago, Frederico C..... —
American Chemical Mfg. & Mining Co.—Shoe Blacking..... 41	Dietz, R. E. Co.—Lamps..... 21
American Lamp & Brass Co.—Lamps.. 8	Diamond Hardware Co.—Stove Polishing Mitten..... 31
American Writing Machine Co.—Calligraph..... 4	Dodd & Williams—Cut Soles and Leather Donegan & Swift—Engines, Injectors, etc..... 47
Armitage-Herschell Co.—Steam Riding Gallery..... 45	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 37
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Doig, W. S.—Box Nailing Machines.... 44
Automatic Injector Co.—Boiler Injectors..... 45	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc.... 23
Ayer, J. C. Co.—Patent Medicines..... 25	Douglas, W. & B.—Pumps, etc..... 7
Ball & Co., Dayton—Shoe Lasts..... 41	Douglass, D. De Forrest—Artificial Limbs..... 45
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Douthitt, J. F.—Tapestry Paintings and Decorations..... 15
Barnett Co., G. & H.—Files..... 39	Dry Kalsomine & Fresco Paint Works. 23
Barton Mfg. Co.—Rubber Stamp Outfits..... 43	Eagle Cotton Gin Co.—Cotton Gins.... 31
Baxter Register Co.—Cash Registers... 21	Eclipse Cement & Blacking Co..... 41
Baxter, Stoner & Schenkelberger—Cut Soles..... 31	Eco Magnetic Clock Co.—Electric Clocks..... 45
Bay State Cut Sole Co..... 45	Electric Emery Wheel Co..... 45
Bignall & Keeler Mfg. Co.—Pipe Threading and Cutting Machines... 44	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Blanchard Machine Co.—Disintegrators 21	Falls Rivet & Machine Co.—Pulleys, Shafting, etc..... 33
Brewer Longitudinal Axle Lubricator Co..... 41	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Brown & Co., B. F.—Shoe Dressing.... 42	Faxon Co.—O. J. Bicycles..... 23
Buffalo Cycle Co.—Bicycles..... 33	Flagg Mfg. Co.—Shoe Machinery..... 39
Burgess, Edward A.—Box Nailing and Trimming Machines..... 45	Foster Mfg. Co., F. W.—Ball Cocks.... 45
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery.... 45	Fraser Mfg. Co.—Manufacturers of Coffee Machinery..... 31
Carver Cotton Gin Co..... 37	Fulton Iron Works—Sugar Cane Mills Furbush & Son Machine Co., M. A.... 44
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 8	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 25
Chamberlin Mfg. Co.—Stump Pullers.. 44	Gillie, Goddard & Co.—Carousels.... 46
Chandler & Taylor Co.—Steam Engines and Boilers..... 37	Globe Buffer Co.—Shoe Machinery.... 39
Chicago Metal Stamping Co..... 40	Goderich Organ Co.—Organs, Stools, etc..... 45
Christen & Sons, F.—Bellows..... 40	Goubert Mfg. Co..... 16
Collins Plow Co.—Plows, Hay and Straw Presses, etc..... 29	Gould Packing Co.—Steam and Water Packing..... 23
Columbus Phaeton Co..... 4	Goulds Mfg. Co.—Pumps of all kinds... —
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 40	Gout Mfg. Co., David D. A..... 40
Crandall Machine Co.—Typewriters... 45	Green Bros.—Watchmakers and Jewelers' Tools and Supplies..... 35
Cretors & Co., C.—Peanut Roasters... 46	Hancock Inspirator Co.—Boiler Feeders Harrington & King Perforating Co.—Mining Screens..... 25
Crosby Steam Gage and Valve Co.—Safety and Water Valves..... —	Hart Mfg. Co.—Faucet Can..... 40
Cunningham Mfg. Co.—Desiccated Egg Food..... 45	Hartshorn Co., Stewart—Shade Rollers Hawthaway, C. L. & Sons—Shoe Dressing..... 8
Deane Steam Pump Co.—Steam Pumps 37	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 6
Dederick, P. K. & Co.—Agricultural Implements..... 46	Hazelton Boiler Co..... 5
Densmore Typewriter Co..... 31	Heller & Bros.—Files, Rasps, etc..... 39
De la Balze Hermanos..... 46	Holmes & Edwards Silver Co.—Spoons and Forks..... 35
De Lamater Iron Works—Hot-Air Pumping Engines..... 42	Horrocks Desk Co..... 45
De Laval Separator Co.—Cream Separators..... 39	

PAGE	PAGE
Houchin & Huber—Soap and Candle Machinery..... 40	Porter, H. K.—Bolt Clippers..... 41
Huntley Mfg. Co.—Flour Mill Machinery..... 37	Premier Pen Co.—Fountain Pens..... 31
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 25	Pulver & Sons, Peter—Lubricating Compound..... 25
James & Co., George—Soles, Taps, Heels, etc..... 44	Quaker City Electric Co.—Dynamos and Motors..... 40
Jeffrey Mfg. Co.—Detachable Chain Belting..... 43	Randall & Son, P. D.—Bolt Clippers... 40
Kalamazoo Railroad Velocipede & Car Car..... 48	Rhyder, W. J.—American Commercial Agency..... —
Kelly Axe Mfg. Co.—Axes..... 39	Root Co., A. I.—Beekeepers' Supplies.. 40
Kelsey & Co.—Printing Presses..... 35	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 33
Keystone Mfg. Co.—Agricultural Implements..... 26	Samson Cordage Works—Cords of all kinds..... 21
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Leffel, Jas. & Co.—Water Wheels and Steam Engines..... 42	Schack, W. G.—Bicycles..... 44
Marston & Co., J. M.—Foot and Hand Power Saws..... 39	Schamdandjian, D..... —
Martin & Co., W. E.—Shoe Dressing.... 45	Schollhorn Co., Wm.—Shears and Scissors..... 23
Mast, Foss & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 7	Schrader's Son, A.—Diving Apparatus. 45
McCammon Piano Co..... 21	Seymour Cutlery Co., Henry—Shears and Scissors..... 39
McGarigle, Thos. E.—Rock Drills..... 46	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
Miller Co., The E. L.—Paper Cutters... 43	Silver Lake Co.—Braided Cordage..... 37
Milton Car Works—All kinds of Freight Cars..... 5	Simonds Mfg. Co.—Saws..... 39
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Slatington-Bangor Slate Syndicate—Roof Slate..... 45
Mooney & Sons, W. W.—Tanners and Curriers..... 5	Smith & Co., H. D.—Carriage Hardware. 8
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 43	Standard Hammock Mills..... 46
Myers, S. F. & Co.—Jewelry of all kinds 35	Standard Tool Co.—Twist Drills, etc... 23
National Meter Co.—Water Meters..... 19	Stanley Works, The—Brackets..... 21
National Starch Mfg. Co.—Maizena.... 29	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 7
New Jersey Car Spring & Rubber Co... 44	Storm Mfg. Co.—Dumb Waiters, etc... 23
New Jersey Paint Works—Copper Paint, etc..... 25	Stubbs' Mercantile Agency..... 43
New Process Twist Drill Co..... 23	Sturtevant Co., B. F.—Pressure Blowers 47
New York City Peanut Roaster Works 46	Sweinhart Co., V. H.—Combination Locks..... 43
New York Metal Ceiling Co.—Metal Ceilings..... 40	Talbot & Co., W. E.—Brick Machinery Tanite Co., The—Emery Wheels, Whetstones, etc..... 45
Niagara Stamping and Tool Co.—Tools and Machinery for Tinsmiths and Sheet Metal Workers..... 45	Tarr, James H.—Copper Paint..... 42
Nicholson File Co.—Files..... 21	Thomas & Co., T. B.—Hammocks..... 47
Norman & Evans—Steam Merry-go-rounds..... 45	Thomson Meter Co.—Water Meters.... 48
Oberne & Co., Geo.—Leather Supplies.. 46	Thresher Electric Co.—Electrical Machinery..... 4
Odell Typewriter Co.—Typewriters.... 44	Tubular Rivet & Stud Co..... 33
Osborne & Co., C. S.—Saddle and Harness Tools..... 46	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 21
Pairpoint Mfg. Co.—Silver Plated Ware 2	Union Sand Paper & Emery Wheel Co.. 33
Partrick & Carter Co.—Electrical Supplies..... 44	U. S. Buggy & Cart Co.—Wagons and Carriages..... —
Pelton Water Wheel Co..... 7	U. S. Playing Card Co..... 2
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	Vetter, F.—Typewriter Desks, etc.... 44
Pike Mfg. Co.—Oil, Scythe, Razor Stones, etc..... 48	Wagen, John F.—Importer..... 41
Plume & Atwood Mfg. Co.—Lamps.... 6	Waterous Engine Works Co.—Saw Mill Machinery..... 16
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 42	Weston Electrical Instrument Co.—Electrometers..... 43
	Whittemore Bros. & Co.—French and Patent Leather Polish..... 6
	Wiss & Sons, J.—Shears and Scissors... 41
	Wood & Paige—Incubators..... 31
	Woolsey Paint and Color Co., C. A.—Paints, Colors, Kalsomines, etc.... 42
	Wyckoff, Seamans & Benedict—Remington Typewriter..... 2

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to originate trade, and not to execute orders, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

It does not take goods in exchange for advertising space.

It does not employ the purchasing power of commission merchants and shippers to influence patronage.

NOTICE TO ADVERTISERS.

We desire it distinctly understood by our customers and those who contemplate making use of our publications, THE AMERICAN EXPORTER and EL EXPORTADOR AMERICANO, that space in these journals for advertising purposes is sold only upon the merits of the publications—for that purpose. For this reason, no advertising solicitor or agency has any right, or authority, to agree to perform any special service whatever to obtain orders for advertising.

We make it a practice not to discuss the merits or demerits of other export trade papers. Comments on their value may be made with more propriety by those advertisers who have had experience in the use of such publications.

THE JOHN C. COCHRAN CO.

INTELLIGENT HANDLING OF NATURAL RESOURCES.

THE natural resource capable of greatest development is the human brain. Through its mechanism intelligence must work out the problems that require solving, in order that each person, the people of every community, may make the highest industrial use of the natural materials with which they are surrounded.

A story, clearly entitled to be classed as wonderful, is told on another page, in giving a description of the labor-performing machinery with which Thomas A. Edison, the American world-famed electrician and inventor, has equipped an iron mine. No fable of olden times is comparable with the marvellous facts there presented to the reader. No more vivid illustration of the power of labor-performing machinery to reduce labor cost can be desired. No more satisfying evidence of the utter inability of uneducated workmen to compete with intelligently designed and directed machinery, in cost of production or quality of product, can be required. The lesson taught by this one illustration of American genius and skill has a world-wide significance. It shows the trend of events which are destined to cause all nations to look to the great American Republic for such manufactured articles as cannot be produced from the natural materials they possess, and for machinery with which to manufacture for final use such natural materials as they have.

To change the output of ore from an iron mine from 100 tons per day to 10,000 tons in a single day, and at the same time to reduce the cost of taking out the ore and preparing it for market to 60 cents per ton is an industrial evolution. To accomplish all this by relieving human beings from all burdensome labor, and placing the drudgery upon nerveless machine slaves, is a stroke for the cause of human freedom and industrial independence, as far-reaching and epoch making in its results as any victory won by patriots on a hard fought battlefield.

Though the atmosphere be charged with excited premonitions of war, unsettling the stability of conditions in all countries, those who look upon events with an intelligent understanding of their true significance know that the demonstrations of militarism are but passing shows. They are but the skirmish line thrown out to mask the movements of the main body, or to explore the country over which it is to move. The day is rapidly passing when supremacy can be gained or maintained by force of arms. All wars are processes of destruction which, from the very nature of their work, must end by reason of exhaustion. When the excitement of conflict is over the inevitable industrial problems to evade which war may be made again stand in the pathway of progress and demand correct solution as the price of prosperity. Industrial supremacy, not lust for military power, is the true issue in every international contention out of which war may come. If war comes from any source, the determining consideration will be the hope of holding or gaining industrial advantages for the people making the declaration. In view of this fact it is well for those in authority to pause and seriously ask how a market bought by the sword can be held except by the sword against the ever-increasing intelligence with which all people are learning to handle their natural resources.

A man-of-war may sail where guided on the free highways of the oceans, limited only by its self-carried stores of power-producing energy. An invading force may move such distances and hold such points as it may be able to compel its antagonists to permit, and in which it can keep itself supplied with all requirements for its maintenance and operations. The power of navies and of armies is based on industry, on the intelligent handling of natural resources. The universal law of cause and effect decrees that those who cannot conquer by industrial power shall not conquer by force of arms. The development of industrial power requires stable conditions of peace. Its limits are bounded only by the intelligence with which every community handles its natural resources. Unlike war, which measures success by what it destroys, industry measures success by what it produces. The one conquers by depriving the

people of, the other by supplying the people with all things that make for their comfort and well being.

When these truths are clear to the minds of men an appeal to the intelligence of all nations to join in requiring a cessation of war, a clearing away of all obstructions to the intelligent handling of natural resources, and the distribution of the resulting products will be effectual. Then will come the day when commercial supremacy will belong to that nation which has the greatest power to supply, not to destroy, the wants of those less able to manufacture for themselves all they need and can enjoy. That nation will be the United States of America.

CAN JAPAN SUCCESSFULLY INVADE THE COMMERCIAL WORLD?

IN undertaking the commercial conquest of the markets of the world Japan bases its expectations of success upon its power to produce manufactured goods at prices with which Western nations cannot compete. Its desire to invade the commercial world is boldly acknowledged. For it to assume that it is a new commercial giant may be a *coup d'état*, but is not a *coup de grace*.

We deny that Japan can take American ideas and American machinery and manufacture goods equal to American products in design, style, finish and quality, at less than it costs to produce them in the United States, or that it can send such goods to the United States and undersell American manufacturers in their home market. A world-wide readjustment of commercial development is taking place. For the future the competition of both China and Japan must be taken into consideration, but their competition is but one factor in the problem. Industrial developments that have been turned into unnatural channels by force of arms in the competition of nations for the supremacy as military or naval powers, or that are based on an unnatural, and therefore a false economic system, are gradually being compelled to seek their natural level by the positive but unwritten laws that control and direct the progress and destiny of nations. As a final result each nation must take rank in competing for the grand prize—the commercial supremacy of the world—according to its own capabilities, which will be limited by the advantages of its natural resources and the intelligent use it makes of them. In this majestic strife of nation with nations, each nation will suffer only in so far as it may induce suffering by its failure correctly to comply with the requirements of natural economic laws.

NATIONAL CHARACTERISTICS.

It is claimed that the Japanese are industrious, thrifty, agile, deft of hand, persevering, patient, energetic, courageous, self-reliant, ambitious to excel; that their manufacturers are indomitable, their merchants enterprising, and that their workmen possess marvellous aptitude for imitation. Admit all this and no characteristic has been named in which the testimony of achievements does not show Americans to be their superiors. Conspicuous by their absence from this list of national characteristics are the sterling qualities of inventive genius, skill to execute new designs, to create new devices, and ability to perceive, correctly to measure, properly to price and combine the masterful powers that really govern the commerce of the world, the basic principles of personal liberty in thought, speech and action, of individual honor and justice. Japanese character is developed from one race, possessing all its weaknesses, while American character is developed by blending, on terms of absolute freedom, permitting and encouraging the highest and best expressions of individuality, all races and people. Americans are kin to all nations; they are dominated by none.

IMITATORS INFERIOR TO INVENTORS.

By refusing to recognize the right of property in an idea, through declining to protect the rights of inventors to their property, Japan deprives itself of the advantages it might derive from inducing the inventors of the world to assist its industrial growth by establishing their undertakings in its empire, and condemns its own workmen to remain imitators, by withholding from them the stimulus of reward for acquiring inventive talent. This failure will

prevent it from bringing and maintaining its industries abreast with the best practices of the age. By the time they can get their imitations sufficiently developed to give them a chance to make themselves felt in the world's markets, their designs will be out of date. he intelligent will not have them.

JAPANESE CHEAP LABOR.

Japanese cheap labor is chimerical. Enthusiasts have talked about the possibility of Japan flooding the United States with cheap goods, duty paid, at from 30 per cent. to 50 per cent. less than the wholesale prices charged for the same goods by American manufacturers. In considering such statements it is well to remember that the basis of comparison is false, because such goods as the Japanese can send to America are not made in the United States. Whenever they are imitations of American-made goods their inferiority is equal to, if not greater than, the difference in price. Their appearance and cheapness may enable them to find a market in Asia for a time, where the people are not good judges of quality, until Orientals get better acquainted with American products; but there is no probability of their permanently displacing American-made goods in Europe or America.

Low rates of wages do not determine low cost of production. Wages are higher in the United States than elsewhere, but American manufacturers can undersell Englishmen in their home market in many lines, and dispute trade with the poorest-paid labor in the markets of Continental Europe. The secret lies in being able, by the aid of ingenious devices and labor-performing machinery, to increase the output enormously per dollar of labor cost.

The course of events will show that labor cost will be decreased in America in the future, as has been done in the past, by employing highly paid workmen, possessing great skill and intelligence, to handle ingenious devices and operate labor-performing machinery having high productive powers. In Japan labor cost will tend to increase as the workmen become more intelligent and conceive higher ideals of living. The Japanese of the next century will have more wants than the Japanese of to-day, and will demand many times the present rates of wages. This movement is already being felt. According to Japanese official reports the wages of females employed in cotton spinning have increased 37 per cent. in the last seven years. Within the last year reports have followed one another in quick succession of advances in wages by leaps and bounds, in many instances the increase made being 100 per cent. Wages are everywhere being pushed up in all branches where skill is required. Not a business concern in Japan will escape the effect of this first result of increasing intelligence. This of itself will destroy the margin by which the Japanese have announced they would undersell Americans in their home markets.

If the Japanese impulse for imitation causes them to imitate the American standard of living, American workmen will have nothing to fear from Japanese competition. Japanese workmen, in their attempt to compete with American machinery, are destined to meet the fate now being experienced by Chinese laundrymen in the towns of Western American States, where the American steam laundry has driven them entirely out of the business.

JAPAN'S COMPETITION WITH AMERICA.

Japan may eventually build its own locomotives, ships, railroads, labor-performing machinery, and take possession of Asiatic markets, but this is not a fact of to-day. By the time its progress in imitative development has brought it abreast with the development of these industries as they exist in the United States in 1896, the progress made by American inventive genius and creative skill will leave the gap between Japanese and American capabilities and achievements in the industrial world nearly as great as it is now.

The Japanese do right in erecting their own cotton mills and steel plants, and in building their own locomotives and ships. It is their duty to do for themselves the best they can, but their industries can have little effect on American home markets or export trade. They may make textiles, and take from Manchester and New England, but to vanquish America they must produce the raw

material. They may in time make steel, and become less dependent on America, Germany and England. They insist they have all the iron they need, but, as a matter of fact, they have developed no deposits of a high character, though their country may be full of it. Their output in these industries may become greater than the requirements of their domestic trade, and may enter the markets of China and India, and furnish both America and England a new competitor in the Orient. Such changes are always going on, but the sovereignty of trade rests with those who possess the widest range of natural resources, and the highest degree of inventive genius and productive skill. These are the real factors in commercial competition. America possesses vast natural resources that have not been touched; its prestige for the inventive genius and skill of its people is outranked by none; its power of achievement and leadership is assured.

AMERICA'S COMMERCIAL INVASION OF JAPAN.

The Japanese are not without evidence of the truth of these statements. American enterprise in Japan is becoming aggressive. The excellence and superiority of American products are gradually making an indelible impress on the Japanese mind, and so winning their way to public favor. Their appreciation of American mining machinery is becoming pronounced; the American locomotive is making an enviable record in their midst; American silk-working machinery is performing labor which they cannot duplicate in other ways, and numberless mechanical devices are causing them to understand that industrial problems are not solved by imitation, but by invention. In the light of such facts America does not fear suffering a commercial conquest from Japanese invasion.

AGAINST FOREIGN PRODUCTIONS.

THE commercial world has long been accustomed to valiant denunciations of the Chinese and Japanese, not to mention Americans, by English leaders of commercial thought, for placing restrictions on the free importation of foreign products. English effort to open all markets to its commerce has not always ended with mere declamations. The pages of history do not require careful inspection in order to find numerous instances where declamation has been followed by force of arms, to open ports by blasts of war that could not be opened by diplomatic argument. For a nation with such a record, for a nation whose only hope of maintaining its commercial importance is inseparable from the widest possible freedom of trade, to permit a suggestion that it may strengthen itself through a system of differential duties with its colonies is to confess its awakening to the fact that it has passed the zenith of its commercial power, and to make its confession visible by its hysterical grasping at the plausible pretext of "Imperial Federation" to procure a shield with which to cover its retrogression in the grand march of the progress of nations.

Still more wonderful is it for a nation with England's commercial record and present position to produce the following paragraph, taken from an editorial in *The British Trade Journal*:

"There is a growing feeling in England against foreign productions. An immense amount of money is spent by British consumers on foreign-made goods without the slightest knowledge that they are buying something for which neither taxes nor wages have been paid in this country."

Is England becoming saturated with the economic ideas of the Mongolians, not to mention some other people who have thought it a patriotic duty to maintain preferences in their home markets for products the manufacturers of which paid the taxes that supported the home government, and paid the wages that supported the home population? How will it suit this leader of English commercial opinion to have all nations adopt and enforce a regulation requiring all English-made goods offered for sale in their markets to be plainly stamped with an English label bearing the inscription: "*English-made, for which neither taxes nor wages have been paid in this country*"?

America can be easily induced to join a commercial union, to

include all nations, to adopt and enforce such a regulation. If England will initiate the movement by furnishing the labels its foreign office may have one complete diplomatic success to show that English prestige is still equal to the task of molding the commercial policy of the world.

MISSIONARIES OF COMMERCE.

COMMERCIAL travellers have been aptly styled "Missionaries of Commerce." It is no disparagement of the noble efforts to spread civilizing influences made by religious bodies, to point out the fact that civilization is never properly established in any country until it is infused with the commodities of commerce. More than this may be said. Commercial considerations, which in the past have been the most potent factors in inducing wars, are to-day and for the future will increasingly be the most powerful factors in inducing world-wide and stable conditions of peace.

We have frequently urged all importers of foreign-made goods, in whatever country located, to get acquainted with America, its natural resources, its manufactures, its business methods, and style of living by making a personal inspection of the country.

Many persons in the South American States remember with pleasure and profit the things they saw and learned in the United States while attending the Pan-American Conference in 1890. It is a good omen to now see a movement initiated to afford representative business men of this great Republic a similar opportunity to inspect the South American States. In no other way can they as easily gain a correct knowledge of the resources, industrial needs and possibilities of those countries, which will enable them to develop South American trade on lines that will be in the highest degree mutually beneficial, therefore permanent.

The practical benefits of such commercial excursions are being recognized by all commercial nations. Sir Charles Tupper has recently advised all Canadian Boards of Trade to send delegates to the June Congress in London of British Colonial Boards of Trade, and predicted the triumph in the Congress and afterwards among the people of Great Britain of the policy of preferential trade relations.

The Blackburn Chamber of Commerce, England, is raising a fund to send a "Commercial Mission" to China to cover a period of twelve months or more, no holiday affair, thoroughly to study the commercial possibilities of the sections it visits and to accomplish all that may be done to establish English trade. A French commercial mission, consisting of 13 experts, has preceded this English mission and is now in China studying the natural products, industries and requirements of the richest and most populous provinces. These movements are civilizers of the highest order. This designation would not require changing if the movements were directed to the United States instead of to the Latin America and the Orient.

We wish to impress the fact on the mind of every importer or buyer of foreign-made goods that the largest, most varied and best supply of all products similar to those originating in the manufacturing countries of Europe can be found in America. We urge them to make a tour of inspection for the purpose of learning by personal observation what they can here find that they can handle or use with best advantage and profit for themselves. A tour can be made in groups or singly. If undertaken for business purposes and prosecuted with business thoroughness, it cannot fail to produce satisfactory business results. *The American Exporter* again tenders its services to all missionaries of commerce intending to visit America, to advise and mark out their routes in the way best calculated to enable them to find what they most desire to see, with least outlay of time and money.

We suggest that each American consular agent interest himself in organizing a group of representative business men in his district to make a tour of the United States as missionaries of commerce. In no other way can they so easily cause the people and the resources of this country to be correctly understood by the people of the district to which they are assigned.

IS COMMERCE CONTROLLED BY SENTIMENT?

IT is generally supposed that English commercial literature is the most fruitful source from which reasons (?) may be drawn to show why commerce should be controlled by economic, not sentimental, considerations. It is also probable that if one nation was to be selected which had, in the most ways, at different times, given the largest number of nations reasons for showing resentment for an affront or an injury by refusal to buy its goods, that nation would, by common consent, be England. In the light of these facts, not least among the surprises caused by the recent shaking up of international relations is the exultation and hot haste with which the English have proceeded to administer punishment to those who have presumed to have an opinion of their own, first by the fiasco of attempting to break the standing of American securities by sacrificing them on the London Stock Exchange. This was soon stopped when the rampant financiers found that all the gore in sight came from their own pockets.

Then came the terrible shock caused by an independent act by the German Kaiser. This can be best described in language from English journals:

How many thousands of pounds sterling loss to the trade of Germany is represented by each single word in that luckless telegram of its eccentric Kaiser will never be known, but the sum total must be enormous. Every day fresh evidences of this are coming to light. Only this week a large back-country hardware producer, who in one particular article had been superseded in the race of competition by Germany, was asked by a large buyer in the North of England to quote his lowest price. He did so, and secured a considerable order, at the foot of which was a memorandum to this effect: "I have been buying these goods from Germany, but I shall send no more orders to that country if I can possibly help it." Retail ironmongers all over the country report that the familiar legend, "Made in Germany," is now a bar to the sale of any article, and reports from the colonies are to the effect that English buyers will not touch a German article if they can get a home-made article at anything like the same value. So that so far as English manufacturers are concerned, good may possibly come out of evil in this matter after all.—*Hardwareman, London.*

Our readers in the British Colonies and India may be interested in a singular issue of the rage against everything Teutonic, arising out of Emperor William's ill-timed and uncalled-for telegram to President Kruger. The London papers have been filled with indignant letters urging the British people to buy nothing of German manufacture. These letters have not been confined to the metropolis. In nearly all the provincial towns similar counsel has been earnestly given. In Birmingham, Manchester, Sheffield, Leeds, Liverpool, Newcastle, Glasgow and Edinburgh letters of a corresponding description have appeared. This very unusual development of patriotic feeling led one of our representatives to make inquiries in a large hardware centre. He quite expected to be told that the letters had brought about no appreciable difference upon the ordinary buyer. He found, however, that he was mistaken. By merchants and shopkeepers, in scores of instances, British-made goods were preferred to the German, even although the foreign articles were considerable cheaper.—*The British Trade Journal.*

The attempt to turn the tide of export trade in favor of English manufacturers by the force of sentiment is really pitiable. None know better than do the English that price and quality control the currents of international commerce, and that when they acknowledge defeat on these points they must abandon the contest. The Kaiser's telegram is unimportant in comparison with the following paragraph taken from the *Hardwareman*:

"The Germans are coming to the fore in the matter of nails made of bright iron wire. These are being delivered free in Birmingham at £8 per ton, and reckoning cost of transit this leaves the selling price to the maker at £7 per ton, only a trifling advance on the price of the raw material. English cut-nail makers are

being run hard in the race with this German competition, and in not a few instances cut-nail works in the Midlands are either partially working or are closed down altogether."

The more it becomes apparent to the importers of foreign-made goods in all countries that they can best serve their interests by ordering from American or German manufacturers instead of English they will do it, sentiment, differential duties, imperial federation to the contrary notwithstanding. There is cause for congratulation for all manufacturing and importing countries, except England, in the disclosures made by the close-fitting analysis of all trade conditions that have been induced by the sudden and widespread shaking up of international relations which has been such a marked feature of 1896. This analysis will result in making indelible the impression on the minds of all foreign buyers that more goods can be bought to their own best advantage, price, quality and adaptability considered, of American than of any other manufacture.

COMMISSION PIRATES.

A WORD OF WARNING TO FOREIGN IMPORTERS.

ADVERTISERS in THE AMERICAN EXPORTER have complained that they have been deprived in part of the benefits of their advertisements because some American export commission merchants have deliberately substituted goods of other manufacturers for their own, disregarding the specification of their goods by foreign buyers. This is simply an act of robbery admitting of no defense on the part of dishonest commission merchants. It is an act that would never occur if the commission merchant did not profit by it in an illegitimate way. He may pretend that he makes the substitution in the interest of the foreign buyer, but if the foreign buyer acquiesces in such transactions he inevitably places himself in the position of permitting the commission merchant to dictate what goods he shall buy and abdicates his own right of choice. To permit commission merchants to step in between American manufacturers and foreign buyers and say to the one, "Your goods shall not be supplied when ordered unless you accede to our terms," and to the other, "You shall not have the goods you order because it suits our purposes better to send different goods," will be to establish a set of pirates as dictators in international trade, a condition that neither American manufacturers nor foreign buyers can afford to tolerate.

There is but one way in which this practice can be broken up. Foreign buyers, being the ones first advised by the nature of the transaction of its occurrence, should at once notify the commission pirate that he has decided to send future orders to a commission merchant who will follow instructions. No foreign buyer need fear to do this. There are plenty of American commission merchants who are not pirates. The quicker a foreign buyer becomes acquainted with them and gets himself out of the hands of pirates the better it will be for him.

This is a question of general as well as individual interest. For the mutual protection of all American manufacturers and of foreign buyers every manufacturer and every buyer experiencing a case of substitution should publish the facts as a warning to all other manufacturers and buyers, so that they, being warned, may avoid further intercourse with the pirates. All men are interested in establishing and maintaining the largest freedom for honorable competition, and all men are as vitally interested in stamping out—absolutely crushing—all dishonest business methods. The primal mission of THE AMERICAN EXPORTER is to originate orders in foreign countries for American-made goods. It believes that foreign buyers can be better served by American manufacturers than by those of other countries. It knows that business relations between manufacturer and buyer can be satisfactory and permanent only when founded on and conducted in accordance with the requirements of the strictest integrity. In the mutual interest of all manufacturers and of all foreign buyers THE AMERICAN EXPORTER offers its pages for the publication of facts, duly verified, that will advise the commercial world

who the commission pirates are as clearly as shoals and rocks are defined on navigators' charts, and for the same reason—safety for enterprise demands that they shall be known and avoided.

Emphasizing what is here stated, attention is called to an article in another column from *The Hardwareman*, of London, under the title of "Colonial and Foreign Indents and Their Treatment."

ALMOST A SUCCESS.

THE Walsall Chamber of Commerce, England, we are informed by *The Hardwareman*, has set an example of "how to do it." At a recent meeting of the council of the chamber a member produced some samples of American-made bridle fronts which were way below the English-made article in price. The Walsall manufacturers were asked to quote in competition on a similar make of goods, and they got down to within a penny of the American price, "with a better article to show for it," is added by way of solace. The old adage, "it is the last feather that breaks the camel's back," may now be replaced by the Walsall finding, that "it is the last penny that turns the scales of trade" in favor of American manufacturers.

PERMANENT MANUFACTURING EXHIBITS.

THE most practical exhibit a manufacturer can make is his manufacturing plant in full operation. The greatest advantage of a world's exposition is in the assembling of the products of many countries conveniently arranged for study and comparison. Overbalancing this advantage are the considerations that the machine on exhibit is not the identical one a buyer will receive. A machine on exhibit is naturally "touched up a little." It is placed to show its operation to best advantage, and is in charge of an expert operator who can correct or conceal any fault before an inexperienced visitor can detect it. It is not unusual for buyers, who give orders under the stimulus of conditions usually surrounding machinery exhibits, to find themselves unable to realize in practical work the expectations they had formed based on exhibition performances.

A great city or a manufacturing establishment, is a practical permanent exhibit, whether viewed for show or for use. Study and comparisons can be efficiently made by visiting the many warehouses and factories. If desired, the machine sought can be found in practical use—not exhibited by the manufacturer whose interest it is to sell, but by a user whose interest is identical with that of the buyer—and the one delivered on an order may be the one actually examined, not one "like the sample on exhibit."

Other advantages are found in examining a machine or any other article at the factory where it is made in the opportunity to become familiar with the various processes of manufacture, and thus to obtain a better understanding of how it should be cared for when in or out of use; how best to use and to repair it. All such details enter largely into the profitable handling of machines or manufactured commodities.

In the interest of foreign buyers, as well as of American manufacturers, we repeat the suggestion that all who can should make a tour of inspection in the United States during 1896. The American tourist in foreign countries is rapidly changing from the pleasure seeker to the business seeker. Business relations will be formed by his visits to foreign buyers. The acquaintance will be only half made, however, until the foreign buyer visits the American manufacturer. If it pays the manufacturer to call on the buyer, it will pay the buyer to call on the manufacturer. This fact will be obvious to any one who will give the subject proper thought.

The foreign importer of American machinery and manufactured products is in the business for profit. By visiting the warehouses and factories of the commercial and industrial centres of the United States from which he draws his supplies, he will not only better understand the machinery and commodities he may handle, but may see many things he can add to his lines, and thus increase his sources of profit.

An impartial estimate of the advantages of permanent manu-

facturing exhibits in practical operation, compared with temporary exhibits, must give the award of highest merit to the former. The difference in time and expense required to go from one to another when located over that of passing from one exhibit to another in a crowded exposition will be much more than compensated by the difference in what the practical buyer will see and learn that he can turn to his advantage in his home market.

COMMERCIAL POLITICIANS.

NO class of men are more prone to draw upon their imagination for facts suited to their purpose than politicians. Business men are guided by facts drawn from their accounts. Economists make their deductions from the principles of natural laws, and correct their bias by statistical records. Politicians pose for popular applause, and say those things which their constituents most like to hear without a careful investigation to learn whether or not the accounts of business men and the scientific deductions of students can be depended upon to prove them true. The most notable recent case of this kind is the broad assertion made by Lord Salisbury that "we (the English) are equal to any competition that may be opposed to us," just previous to the appearance of a flood of evidence from all quarters of the world, not excepting the "tight little English islands" themselves, showing that the English are being beaten in every market, including their own home market.

Not in any sense following an example so imperial, but simply blindly obeying the natural impulse of a politician, a German count has set up his assertion to be pulverized by a fact. Please read the following, supplied to us by the *Breeders' Gazette*:

"During the agrarian discussion in the German Diet not long since Count Von Hohensbroech declared that 49 out of 50 cases of trichinosis in pork discovered in Germany were imported from America, and he called for a more stringent examination of American pork. Dr. Salmon says that the only cases discovered so far as reported to him have occurred in product taken into Germany via Belgium. The latter country does not require a microscopic inspection of American pork, so that the meat exported to Belgian ports is not inspected. So long as the Germans persist in eating their pork raw, they, of course, need such inspection, not only of American but of all other pork, and if they want to keep out uninspected product they should stop their import trade from Belgium and England. People who cook their pork before serving it have no need of government inspection."

These instances serve to show why it is that politicians are not safe guides for the people, and why commercial intercourse is obstructed, taxed and curtailed in so many ways by measures which those identified with industrial and commercial interests only know to be unnecessary, unjust and detrimental.

American vs. English Paper, Printing, Etc.

LOUIS CASSIER, the founder of *Cassier's Magazine*, has given me some interesting facts respecting the comparative prices of paper and printing in America and England. As an English edition of that American engineering periodical is issued, contracts are made in both countries for the same work. The cost of fine magazine paper for illustrating is $8\frac{1}{2}\%$ in England, as against $7\frac{1}{2}\%$ in New York. The cost of presswork is practically the same, being 10s., against \$2.50. The cost of composition is also the same, although printers' wages in America are double those of English printers. This is because the American printer is more expert and does more work in the same number of hours. Electrotyping is much more expensive in England than in America. The cost of binding is \$13.64 in London, as against \$9 in America. The cost of fine engraving for illustrating books and magazines is 50 per cent. more in England than in America. The English processes are inferior in artistic quality to the American. These statements, made by a practical business man, tend to prove that the manufacture of books and magazines is cheaper in New York than in London. Composition and presswork cost no more, and paper, binding, engraving and electrotyping are all cheaper. If the royalties paid to American authors are lower in America than in England, it is because the cost of advertising and distributing books through the retail trade is much greater. Except in fine grades of writing stock, the paper required for newspaper, book and magazine work is cheaper and better in America than in England. American paper exporters already have a large trade here, which might be materially increased if there were sharper competition with German manufacturers for the control of the English market.—*New York Tribune London Letter*.

Venezuela and American Trade.

[From Our Special London Correspondent.]

LONDON, March 2, 1896.

DURING the past two months, we, in England, have had nothing else so important to discuss as the adoption of the Monroe doctrine by the United States Government and its possible application to Europe.

As the question of Venezuela has been so prominently before the commercial public in this country, I have taken the opportunity of gathering the opinion of those best able to judge as to the value of the Venezuelan trade to the United States. So far as I have been able to ascertain it is thought that one result of the present complication will be a closer commercial relationship between the United States and the Venezuelan Government.

Now what are the facts? Venezuela is a comparatively poor country. It has great natural resources and can produce much raw material, but it is very poor in manufactures. Its principal industries are the cultivation of coffee and cocoa, cattle raising, sugar-cane growing and its manufacture into rum and sugar, gold mining and the collection of various natural products for exportation.

Its manufactures are mainly confined to boots and shoes, hats, soap and candles. Up to the present Venezuela has bought largely from England and always considerably (but to a rather smaller extent) from the United States. Germany, France and Spain have also exported manufactures thither, although only to a minor extent, so that in actual practice American exporters would only have to deal with British competition. It will be useful if I note the class of goods supplied by the different countries named above. England sends cottons, woollens and general merchandise; the United States supply breadstuffs (which fact shows how backward the farmers in Venezuela must be), oils, machinery for agricultural and manufacturing purposes, provisions and general merchandise; Germany, cutlery and general merchandise; France, silks and fancy goods; Spain, wines and tobacco.

In 1886 Venezuela imported foreign goods to the value of \$14,465,000; in 1893 the returns show \$21,975,000; while in 1895 returns show, I believe, an estimated value of \$21,000,000. The commodities quoted above are in common use and are all obtained from abroad.

Business is conducted on a sound footing in Venezuela; the currency is on a satisfactory basis, and the two principal banks (the Bank of Venezuela and the Bank of Caracas) are in a solvent condition. The population has increased from 2,075,000 in 1881 to 2,323,000 in 1891.

It is quite desirable that the Venezuelans should become acquainted with the merits of American machinery and labor-saving appliances. Coffee cultivation is, as I have already pointed out, one of their principal industries. It might be greatly developed if the proprietors of the plantations would show a little more enterprise in adopting newer mechanical appliances. The manufacturers in the United States have had years of practical experience in perfecting this class of machinery and the excellence of their productions is amply testified by the fact that they ship large quantities to South American countries. The qualities which have enabled American makers to outstrip European competition in this respect are, among others, the greater adaptability of the American machine to the needs of the country thus supplied. If an appliance is to be sent to a place where skilled mechanical labor is difficult and costly to obtain for repairing purposes, it should be constructed with an eye to minimizing such contingencies by making everything as plain and simple to the eye of the laborer as is possible, and then, too, where skilled labor is dear, such machinery should also be made so as to reduce human help to the least possible degree, thereby rendering the proprietor independent to a large extent of such assistance. There is another point which has always told in favor of American machinery of all descriptions and that is that it is much lighter than that made in Europe. This is done without in any way affecting the durability and efficiency of the machine.

Venezuela is largely a mountainous country, and although there are several railroads intersecting parts of the more populated districts, yet a great deal of the transportation of merchandise is done by mules, wagons, etc. This being the case it will easily be understood that lightness is an essential quality.

And then, again, there is the mining industry, second only in importance to coffee. There is no doubt that American mining machinery has a market in Venezuela, especially when we remember that such machinery is sent all over the world by American makers. We find it in the South African gold and diamond mines, in the tin and Silver mines of Australia, in the newly discovered gold field of Southern Australia and in British Columbia.

Whenever Venezuela becomes a more important agricultural country it will be a splendid market for American farm implements, tools, etc. It is hardly necessary to refer to the reasons why this will inevitably follow. The various South American republics have all by this time become large buyers of American implements for the simple reason that the United States is much nearer to them than Europe, and primarily because the South American farmers find that they can do more work with the American implements.

I have said nothing about the thousand and one labor-saving devices which abound in the United States and which are eminently suited for use in Venezuela. The recent diplomatic difficulty between the three countries will doubtless have the effect of bringing the United States and Venezuela much closer together, and then, with the growth of sympathy, it may reasonably be expected that trade will expand between the two countries. Venezuela needs capital, a strong and pure government, energetic business men and modern labor-performing machines, tools, etc., all of which necessities are to be found in the United States. Why, then, go to Europe?

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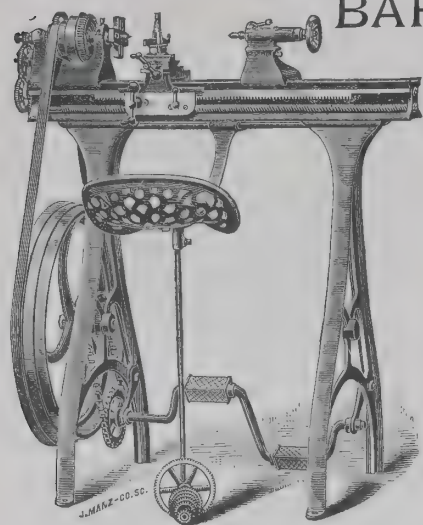
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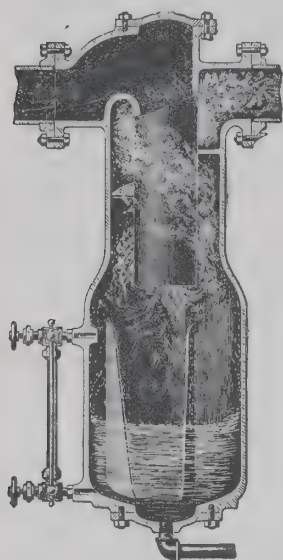
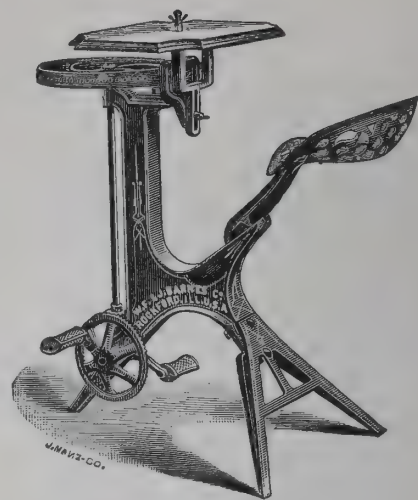
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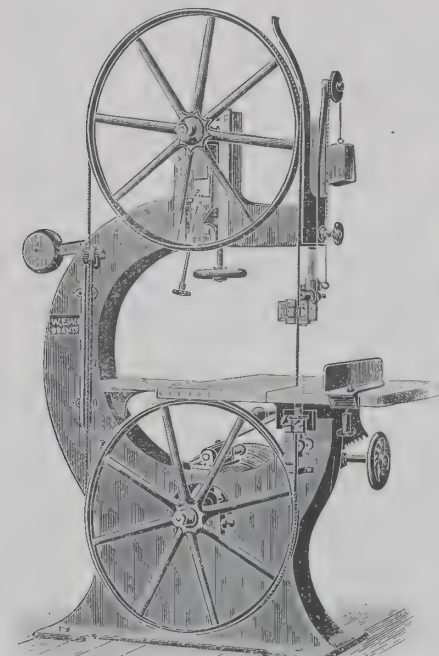
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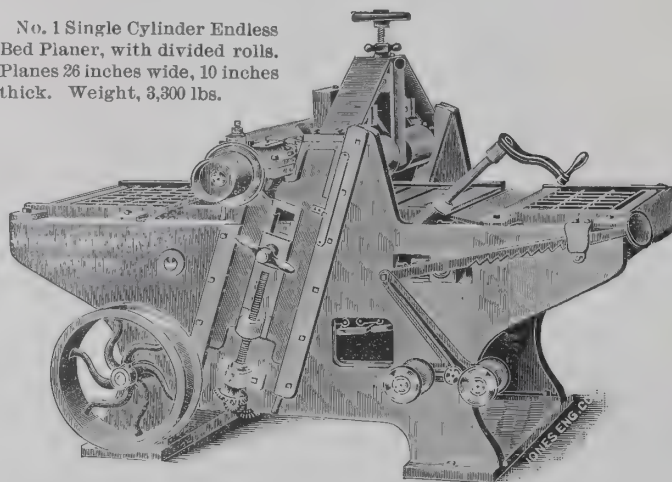
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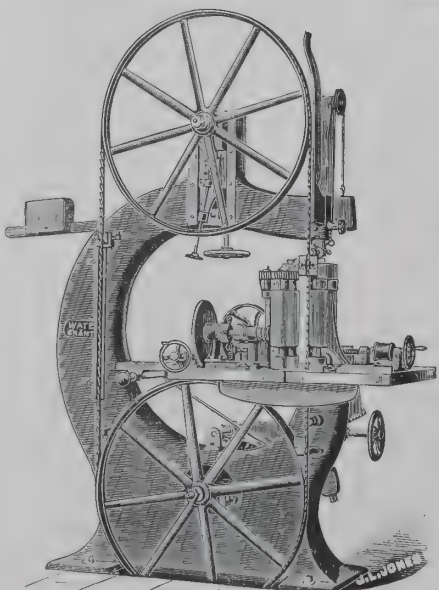
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DEVOTED TO THE FOREIGN TRADE IN MACHINERY AND HARDWARE.

Wonderful Labor-Performing Machinery in Edison's Iron Mine.

AT the iron mine owned by Thomas A. Edison, in Sussex County, New Jersey, the first mining was begun about five years ago, after \$3,000,000 had been expended in equipping the plant. Since that time numerous changes and improvements have been made, and the mine is now able to turn out 10,000 tons of the very best quality of concentrated iron ore—the kind used in the manufacture of steel—in a single day as against 100 tons a day under old methods. Furthermore, the ore can be taken out and prepared for the market at the nominal cost of 60 cents a ton. It sells for \$7.50 a ton.

The plan of taking out the ore is briefly as follows: First, by means of eight huge steam drills, driven by electric power, the rock is blasted out in pieces that weigh from 8 to 10 tons each. These mammoth iron bearing quartz boulders are then hoisted from the pit by means of an electric crane, and are loaded on platform cars, which carry them to the crusher plant. This is the heaviest and most powerful piece of machinery ever built. The shaft is 22 inches in diameter, while the crusher measures 12 feet across, and, driven by electric dynamos, makes 300 revolutions a minute. From beneath the massive machine the crushed and broken rock is dumped into an electric elevator, which hoists it 65 feet to a hopper, down which it slides to the jaws of two sets of ponderous electric rollers.

From this hopper the rock comes out in pieces the size of hens' eggs. These pieces fall upon an electric-driven belt conveyor and are whisked away to another elevator, in which they are again carried up 65 feet to an electric dryer that has a temperature of 350 degrees Fahrenheit. Through this they pass, and are deposited in a huge cone-shaped stockhouse. Thence they fall through the small end of the cone into 900 buckets, which are attached to an electric conveyor, and these carry the egg-sized pieces of rock to three sets of high pressure rollers.

Beneath the rollers the rock is granulated—ground as fine as sand—and thence, after passing through a series of screens, the granulated rock is transferred to the most wonderful part of the entire plant. This is the magnet-room. There are in place 1,200 magnets, each 12 feet long, wound with 10 miles of wire and stored with 750 volts of electricity.

In the magnet-room the conveyor branches off in two directions, and as the junction is reached the slag sand, unaffected by the electricity, keeps on a straight course, and is eventually dumped into the yard of the plant. But the minute particles of iron the sand contains cannot resist the force of the powerful electric current, and are deflected into a separate channel. Down this they dash to the "mixer."

In the "mixer" a chemical compound, of which only Edison and his chemists know the exact nature, is added, causing the iron particles to cling together and form a heavy, sticky mass. This mass flows into the "bricker-room," where 40 machines, each capable of turning out 60 bricks a minute, press it into solid blocks of concentrated iron ore, weighing 16 ounces each. These pass into another electric dryer, and from there, firm as the solid rock from which they were taken, are loaded upon platform cars ready for shipment.

Probably the most remarkable feature of the entire plant is that during all the stages and progress the iron-bearing rock passes through, travelling a distance of $3\frac{1}{2}$ miles, it is never touched by human hands. Everything is accomplished by means of an intricate, delicate, but ponderous system of automatic electric machinery, every bit of which is the product of Mr. Edison's brain. It is on account of the doing away with the necessity of an army of workmen that it is possible to take out the ore at such a small price.—*Ex.*

Long Life of Good Machinery.

AN instance of the longevity of first-class marine engines and boilers when the best of material and workmanship were put into their building the White Star liner, Germanic, recently furnished an example worthy of note. Since 1875 this steamship has made her regular trips between Liverpool and New York. In that time 422 passages were made across the Atlantic, covering a distance of more than one and a half million statute miles. At the close of last year the vessel was returned to her builders for new boilers and engines of a different pattern. In this 20 years of hard service with its story of tempests and storms, the true and conscientious work of the engine and boiler maker came out of the struggle not for repairs, but to be replaced by later types of machinery.

The American Pig Iron Industry.

THE statistics of pig iron production recently published by the American Iron and Steel Association give the official stamp, as it were, to the various reports of the recent rising tide in the iron trade. As in previous periods of great activity, all estimates of the output of the past six months fell short of the actual yield. The magnificent total for the year, 9,446,308 gross tons, causes a feeling of exultation among those who watch the progress of the iron trade. Not only has the record of the United States been beaten, but all other countries have been left far in the rear. The nearest competitor, Great Britain, will probably fall below more than 1,000,000 tons, although in the previous year surpassing by over 700,000 tons. The recuperative energy of the United States was never more strikingly shown than in the jump made in the production of pig iron in 1895—namely, from 4,087,558 tons in the first six months to 5,358,750 tons in the last six months.

The huge output thus attained undoubtedly exceeded the requirements of the country, and the iron trade is now suffering from the consequences of the excessive production. Yet despite present appearances it is altogether probable that this year will see the figures for 1895 exceeded, and that the 10,000,000-ton mark will be finally reached and passed. The overproduction of last year was in the last half of the year, when the output was 5,358,750 tons. Up to October 1st there seemed to be almost a pig iron famine. At that time the production of pig iron was proceeding at the rate of about 200,000 tons weekly. By November 1st, however, furnaces were making 217,000 tons weekly and that rate was practically kept up until in December, closing the year with furnaces running at the rate of 207,000 tons weekly. For a time, therefore, the output was at the prodigious rate per annum of 11,250,000 tons. At the close of the year the annual rate had fallen to 10,750,000. With consumption proceeding at its current rate production cannot be restricted much further. The country is very far from being in the condition of paralysis which followed the panic of 1893 and continued all through 1894.

The consumption of pig iron last year, according to the data of production and stocks presented by the American Iron and Steel Association, and estimating total imports at 50,000 tons, was 9,651,504 tons, against 6,718,960 tons in 1894; 7,007,194 tons in 1893, and 9,318,742 tons in 1892, which was the next largest year. The consumption therefore exceeded the production by over 200,000 tons. But this does not tell the story quite so forcibly as the figures for the consumption during the last half of the year, which are 5,379,208 tons, or far beyond any period in the history of the country. From these figures similar a considerable shrinkage could take place and still leave the requirements of the United States at over 10,000,000 tons of pig iron annually from this time forward.

The Rise of the Summer Stove.

THE summer stove has long since ceased to be a novelty. It has made its way into public favor with good reasons for the same, and is likely to continue there on just the same claims. It may be heated with gas or oil, it may be costly, complicated, or otherwise, but wherever obtainable its service will secure its use. To this end, and with an appreciative knowledge of its popularity, the production of gas and oil stoves has become a great and growing industry. It represents heavy investments of capital, a host of ingenious devices, and continuous improvement both in artistic designs and practical utility. The producer of coal gas is in many of our cities extending the radius of supply, and the pedler of oil or gasoline is becoming as much in evidence as the milkman or the huckster. As the summer stove is in response to climatic conditions it is as directly so with the tastes and needs of modern times. It is an economizer of time and labor. It needs no coal shed and makes no smoke. It is independent of the chimney, and makes no contributions to the ash heap. It leaves the buck saw on the peg and involves no visits to the wood pile. It needs but a match and the turn of a screw to give it its meridian glow. It saves soap and towels, the penance of perspiration and a late breakfast. The housewife escapes her daily parboiling and the family the usual strife as to who will light the fire. The stove that glowed like a forge and fried other things as well as steaks, and made an equator of the kitchen and a cauldron of a cottage, is now being replaced by its improved successor. Less dirt, less odor, less labor, less time, and less expense are all in favor of the summer stove. It may insist on more care or intelligent use, and may have its risks when out of repair and not properly handled, but its economies and other advantages are so manifest that its permanent place in household equipment is guaranteed till something better replaces it.

American Manufacturing Methods.

ANY machine shop engaged in making engines, printing presses, milling machines, or any other class of work on which there are small pieces which involve a great amount of labor on a comparatively small amount of material, should make these smaller pieces in quantities and carry them in stock. Most shops make the mistake of making the exact number of each of the small parts required for a certain order of machines only, notwithstanding the fact that a month after another lot of the same machines will be again finished.

In a certain Chicago shop, where Corliss and slide-valve engines are built on orders only, they make no pretense of carrying engines in stock, yet they make the smaller details of valve gears by the hundred pieces, thereby being able to make excellent use of those money-savers, special tools, which reduce the cost of these small parts to the lowest possible figure, besides enabling them to make prompt shipments.

There was a time when every machine shop hammered out on the anvil, turned and threaded in the lathe, every stud, bolt and screw used in the shop. But no modern shop can do it and stay in the procession. What is true of bolts, screws and studs is also true of other small machine parts—they must be made in quantities and carried in stock. Let any shop to-day undertake to build a common, small slide-valve engine—I mean the shop which occasionally builds such an engine—making the screws, bolts, etc., and that shop won't get as much profit out of it as the manufacturer from whom they buy their oil cups.

Seventy years ago a shoemaker could make shoes complete, including the making of the wooden pegs by hand, and support a family. How is it to-day? The man who, by special machinery, makes only the wooden pegs gets a better living, more leisure and luxuries than the old shoemaker ever dreamed of. I personally know of a case where a boy, working for 50 cents a day, earned for the shop one dollar an hour, simply drilling $\frac{1}{8}$ -inch holes through small brass ferrules, similar to those on a file handle; and of another case where a large shop had some thousands of pieces which they could not machine in their own shop for less than 25 cents each, so let them out at 18 cents each to a little one-horse shop run by two young fellows. Those fellows spent about \$5 in fixing up for the job, and turned 65 of those pieces each per day, as long as the work lasted—and it was only lathe work after all. They worked pretty hard; but there are quite a number of machinists who would be willing to work hard for \$11.70 per day. This all points to the fact that, in order to get money out of the shop, the work must be divided into specialties, and finished in quantities, by special tools, or by special men. You can't have a man run a lathe to-day, a planer to-morrow, and a milling machine next day, and get any money out of your shops.

Seventy years ago my grandfather was working as a carpenter, building houses. I have seen the planes he used to plane sticks with, by hand, for window sash. Go into a hardware store to-day and ask a young clerk to show you a sash-plane, and 10 chances to one he wouldn't know what you were talking about.

There isn't a piece of a modern house which isn't drawn from stock and assembled. The idea of building anything piece by piece for each individual case is fast going out of date; and in the case of house carpenters is so far out of date that even their tools have become relics of prehistoric times.

Speaking of engine building, I have in mind another shop where they make complete, and carry in stock, 100 governors, and they make the smaller parts of these governors by the thousand pieces—which means, when compared with the cost of making them piece by piece for individual engines, that they practically get them for nothing.—*W. H. Chappell, in American Machinist.*

An Australian View of American Railroads.

WE know how prone the great American public is to criticise or denounce the management of American railways. While there are grounds in some cases for such censure, we should not forget the fact that, taking everything into consideration, Americans have fully as good railway service as can be found in any land, and in many respects they have the best. Such is the opinion of visitors competent to judge and who have examined American railway systems. The latest authority to express this opinion is Hon. H. R. Mackay, Commissioner of Victorian railways, who, after a recent visit to the United States, wrote an American railway president as follows:

"Among other subjects I looked into was railway freights and fares, and although I heard a good deal of grumbling about the former in some of the agricultural States west of Chicago, after full inquiry I arrived at the conclusion that in both freight and fares and in railroad accommodations generally the Americans are about the most favored people in the world. If one considers the sparse settlement in the West, the excessive competition, and the peculiar policy adopted by many legislatures toward the railroads, one cannot but admire the genius for practical management and the fertility of resource under great difficulties which is displayed in the working of the lines. I only wish that our Australian government roads approached the American standard in equipment and in business-like care for the convenience of shippers and travellers."

In this connection the statements made by the gentleman mentioned relative to governmental railroad management in Australia may be of some interest. He states that, from the very nature of things, government management of railways is weak, inert and vacillating when compared with private management. As the temper of the public will not permit the leasing of the Victorian lines, the next best thing is to create a form of independent control which, while subject to parliament in important matters of policy, will be strong enough to manage the system on purely business lines without employing unnecessary men or paying extravagant wages.—*American Manufacturer.*

American Beam Mill at Homestead.

AN English technical journal which is now devoting considerable space to describing American metal gives the following relative to the beam mill at Homestead. "A new mill for rolling beams up to 24 inches in depth is a remarkable piece of machinery. It takes an ingot of about 20x30 inches in cross section, reduces it by a two-high reversing mill to a long bloom, carries this on rollers to a hot saw, where the ends are sawed off and is cut into two lengths. One of these lengths is delayed on the rollers under a long oven heated by natural gas, which keeps it warm while the other lengths proceed to the three-high finishing mill, which contains four stands of rolls and a locomotive crane on each side to transfer the beam from one stand to the other. The beam emerges from the finishing pass about 110 feet long, and another hot saw cuts off its ends and divides it into lengths as desired. A carrier of driven rollers about 600 feet in length takes the beams out of the storage yard, which is several acres in extent. This yard is served by a great number of electric-driven overhead travelling cranes, which completely cover the yard in parallel rows, so that a beam can be placed with the utmost convenience in any part of the yard. From the yard they are brought back as needed by means of the travelling cranes and another set of driven rolls into the mill, where they are cut to exact length cold by an immense cold saw. This saw is a steel plate 84 inches in diameter and 5-16 inch thick, driven at 1,500 revolutions per minute by a 36-inch belt from a countershaft, which latter is driven by another belt from a 500 horse-power Porter-Allen engine. The velocity of the circumference of the saw is over six miles per minute. It will saw through a 24-inch beam in eight seconds, and it can saw to length the whole product of the mill. The beams as they leave the finishing pass of the rolling mill and after cooling are perfectly straight in the plane of their flanges, but they are apt to have slight bends side-wise, and these are straightened in a straightening press driven by an electric motor. This press contains a series of vertical pressing dies which are so arranged that they can be instantly changed in position by a hydraulic cylinder, so that the pressure of the dies can be caused to slightly curve the beam toward either the right or the left, as may be necessary to straighten it. So rapid is the action of this press that two men operating it are able to straighten all the beams that are made by the mill."

Importance of Recent Electrical Discoveries.

AT the termination of two weeks' experimenting Mr. Edison, the inventor, announced one day last week that he had so far perfected his fluorescent tubes and mastered the details of the Roentgen rays, that he would soon be able to make snap-shot photographs through almost any substance of medium thickness. The ensuing day he declared that he had not only been able to secure these shadow photographs, but had done so in the space of 60 seconds. Ordinarily it requires from 15 minutes to three hours to do the same thing. Mr. Edison obtained clearly defined images of strips of various metals on a sensitized plate. The rays penetrated a heavy piece of cardboard and a vulcanized plate holder in getting to the plate in seven seconds. With an attempt to photograph a human brain Mr. Edison declares his experiments will cease and further advancement will be left in the hands of others. He denies that he intends to experiment along the line of tempering metals with the rays at present, but efforts are now concentrating at Washington toward determining the existence of secret flaws in metals by the application of the cathode rays. The process is to be thoroughly tried at the Carnegie Works, where a large amount of naval construction is under way. If this can be done, the importance of the test from an industrial standpoint cannot be overestimated. It will be possible to secure an exact knowledge of the nature of great guns without running the risk of explosions, defects in the shafts of ocean steamers can be developed before the shafts break, and steel castings used for structural purposes can be accurately tested before being put in place. A report from Berlin asserts that both sides of a medal have been simultaneously photographed by means of the "X rays." Wizard Thomas Edison, however, will not yet state definitely if he is ready to inaugurate a new era in metallurgy by announcing that the rays will penetrate steel. In a somewhat similar line he has strongly advocated the defending of the American coast and seaboard by means of most marvellous electrical devices. His suggestions have caused a great deal of flip-pant comment, for they read like a fairy tale, yet Russia is to have an electrical branch to her army and a military electrical school, and serious thinkers are asking the question if it is not time that the great American power of electricity should be recognized in the American army.—*Chicago Journal of Commerce.*

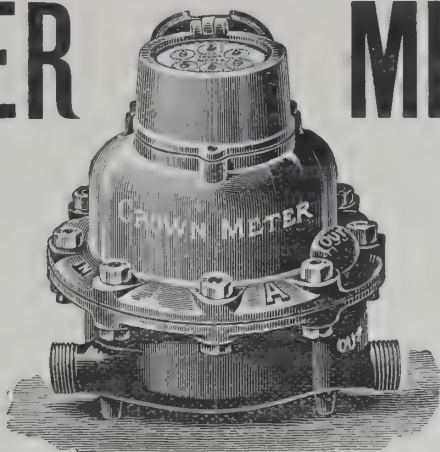
To Make Bottles by Machinery.

THE Toledo Glass Company, of Toledo, Ohio, is pushing work on its new factory to contain a 12-pot furnace, from which will be manufactured the finer grades of wine and beer bottles, made in a paste mold in connection with an automatic blowing machine. The gatherer brings the glass, places it in the machine, which grasps it as a blower would, and holds it straight while the mold closes; it then revolves the pipe as a blower usually does when blowing in a paste mold. The mold opens automatically, and after the pipe and ware are removed the mold is dipped automatically in water and brought around in a circular form, and is ready again when the gatherer brings along the next piece of molten glass which he has been preparing. In this manner it is stated on good authority that 400 paste-mold tumblers have been produced in one hour. Even electric bulbs are not an impossibility with it, but the firm only expects to enter into the production, as has been before stated, of the finer grades of wines and beers.

CROWN, NASH, : GEM : AND : EMPIRE WATER METERS.

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In Actual Service at the Present Time.



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YEARS OF EXHAUSTIVE SERVICE IN ALL SECTIONS OF THE GLOBE HAVE DEMONSTRATED THE
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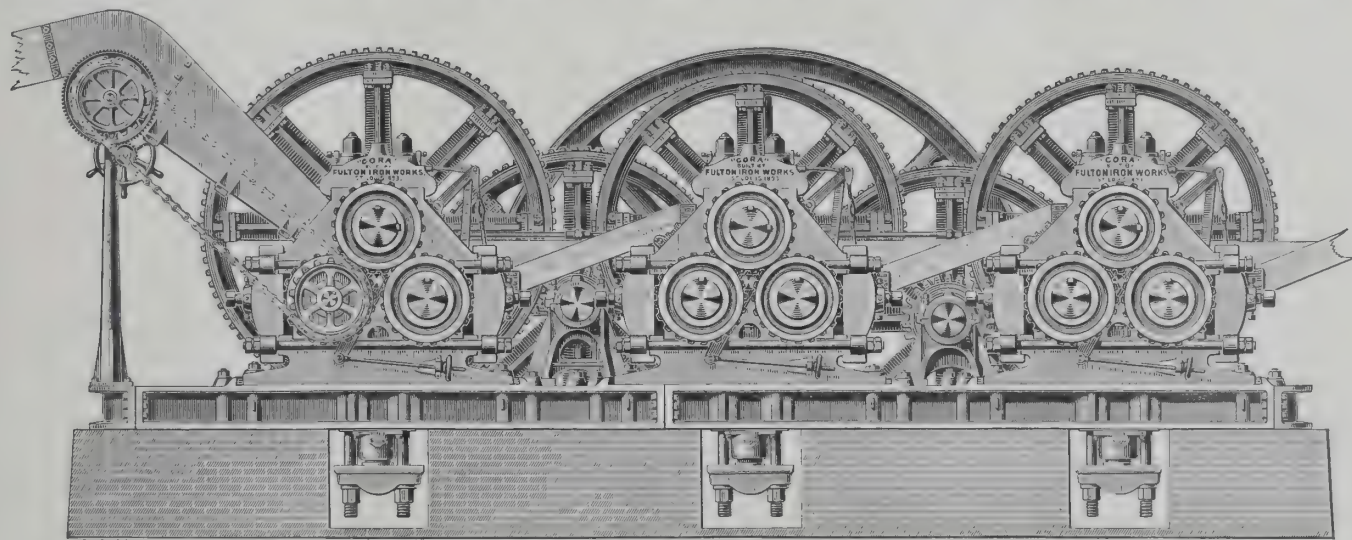
NATIONAL METER COMPANY,

MARCH, 1896.

298 Broadway, New York, U. S. A.

'CORA' Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by "FULTON IRON WORKS," St. Louis, Mo., U. S. A.

Per S.S. "COPTIC."

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104 $\frac{3}{4}$; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.

Brantford, Canada.

THE concentration of well-managed industries has made Brantford one of the most prosperous cities of the Dominion of Canada. It has shown an unbroken record of progress for 20 years past, commencing with a taxable valuation in 1877 of \$3,358,610 and a population of 10,631, and closing with a taxable valuation in 1895 of \$6,300,641 and a population of 16,228 for 1896. This is an evidence of the vitality and strength which these industries possess to-day, and it shows that they are in the front rank of the national enterprise of the Dominion.

The Brantford Board of Trade was organized in 1866 as the result of a conference, at which it was resolved "that the formation of a Board of Trade will add materially to the commercial interests of the town."

This board recently held its annual banquet, and we are indebted to the Brantford *Expositor* and the Brantford *Courier* for an account of the proceedings and an historical review of the board's work and influence, which necessarily involves a statement of the growth of the city and its industries.

Indicative of the outreaching spirit of trade which animates all manufacturing centres it is stated that at the first quarterly meeting of the board one of the questions discussed was the desirability of securing the appointment of a United States Consul, resident at Brantford. This desire for close commercial relations with the United States and the means for promoting the same may be profitably adopted by business men in the industrial and commercial cities of other countries.

The impetus of expanding trade is shown in a self-reliant and ambitious paragraph of the first annual report, which says:

"To develop our own markets must ultimately tend more to the advancement of the country than to depend alone upon the United States as a market for our surplus products."

Action based upon this true inspiration caused the manufacturers of Brantford to push the sale of their goods in the markets of the world. As a means to this end they have spent over \$450,000 in improving railroad facilities, and those who have succeeded in creating the widest foreign demand for their goods in foreign markets have used THE AMERICAN EXPORTER to make their names and products known to probable buyers in other countries. Under the stimulus of such clear-sighted enterprise the industries of Brantford have grown and multiplied until it is now a manufacturing centre for cotton and woollen goods, wagons, carriages, agricultural machinery and implements, windmills, bicycles, wood working machinery, engines and sawmills, binder twine, woven-wire goods, leather, varnishes, etc.

At the banquet in question the Hon. T. Ballantyne voiced a true commercial intelligence when he said:

"Differential duties will not do much for the country. What you need to do is to produce the best and cheapest goods you can, and sell them in the freest and best market."

This idea universally applied will establish a commercial federation of the world.

Mr. Frank Cockshutt, president of the board, stated that its membership included every large industry in the city, and he made a spirited appeal to young men beginning to assume important trusts to live for something higher than themselves—for the good of the community, the country and the world. This is the feeling inevitably aroused and broadened in one who is finding customers for his manufactures in many countries. Such sentiments as these lead directly to the conclusion that the manufacturers of Brantford make honest goods. It is not, therefore, a surprise that Mr. Wm. Buck, the oldest manufacturer of Brantford, should say:

"The name of 'Brantford' on any line of goods is a guarantee of honesty and good money's worth. It is worth a great deal to any industry to be established in this community."

As a fitting conclusion the editor of the *Expositor* says:

"If Brantford is to progress in the future, as it has done in the past, there must be a steadfast devotion to its interests on the part of its leading men, and a willingness to sacrifice time, and, if necessary, money, to keep aloft the civic banner. Such have been the characteristics of the men who have made Brantford what it is to-day, and such, it is to be hoped, will be the characteristics of their successors."

The interest of the community and the nation is greater than that of any individual or corporation. Honest manufacturing can be done more cheaply than elsewhere in an industrial centre where giving "good money's worth" is the ideal of the community. The products of each manufacturer can be handled more cheaply where all have combined to make the necessary investment to secure good transportation and terminal facilities, and trade can be more easily obtained in foreign markets for each producer where all combine to publish information regarding what they are prepared to supply separately or in combination.

The society of mind is universal. It holds in touch the intelligent of all countries of the world. The readers of THE AMERICAN EXPORTER are members of this unassembled commercial society, and each month they are brought into touch with each other through the medium of this publication. Such being the mission of THE AMERICAN EXPORTER, it is the organ of all boards of trade.

When men cease to think of time and money devoted to the upbuilding of the general welfare as being a "sacrifice," and appreciate the truth that time and money so employed is put to its highest economic use, they will suffer no instrumentality that can be made to serve a broad commercial or a high patriotic purpose to go unused.

—The first practical electric street railway dates from 1887, in Richmond, Va,

The Modern Candles.

NOW that candles have again come into use as a means for lighting reception-rooms, where gas is considered too hot and electric lights too glaring, comparisons are being made with the candles of to-day and those of the long ago. He is not a very old man who still remembers the malodorous "tallow dip," six to the pound, that he bought at the grocery, or perhaps may have helped to make, in a domestic way, on Saturdays when at home from school.

It is but a few years since candle molds were a very important and necessary part of every household, and yet so completely are they now banished to the limbo of forgotten and useless things that there must be thousands of young people to whom a pair of snuffers and a candle mold would prove undoubted curiosities. They were not very pleasant to the nostrils, those old-fashioned tallow candles, their illuminating power was not good, and their need of constant snuffing was indispensable, and, though the fingers were the handiest of snuffers, one was very apt to get badly smudged in the course of an evening.

Yet the world stumbled along with no better light than that for 18 centuries and accomplished considerable things on the way. Great scholars were made by saved-up candle ends, great volumes written and the world enlightened, even if the writers and teachers groped a great deal.

The great performances of Garrick and Siddons were given behind footlights of tallow candles, and the candle snuffer was one of the most important of supers in the theatre of the olden time. "Without a candle snuffer," says Goldsmith of a play he had seen, "the piece would lose half its embellishments."

In those days "early to bed and early to rise" was a maxim that had much more significance, for it was necessary to get more out of daylight than in this era of gas and electricity. Candles have always occupied an important place in public worship. In the old times Christmas was called the Feast of Lights, because many candles were used at the feast, while the custom of setting a candle at the head of a dead person after being "laid out" is still a practice.

But if people think that candles are not much used nowadays they are mistaken. There are still several candle manufactories in New York. A very large export business is done here, chiefly to the West Indies and Central America. In the United States sales are principally in the Western States. The mining region takes large quantities, for no light but candles is used in gold and silver mining.

Candles are also used for church purposes, at country hotels and, to some extent, in families. Many of the people of the east side, newly come to the country, use candles in preference to oil, being accustomed to candles and afraid of the oil. Although it is not a great while before they are won over to the use of oil, there are always thousands of others who for the first few months of their being here shun oil as they would a deadly poison.

No branch of industry has undergone the change that candlemaking has in the last 30 years. Formerly it was merely a mechanical operation. Anybody could make candles, and almost everybody did.

Now it is a scientific industry, bringing to its aid the resources of chemistry. Formerly a candle was a greasy, noisome thing, that one usually handled with disgust; now it is artistic and refined, and can be handled without the least offense. The wick is so prepared that the combustion is complete, and snuffers have long been banished. An ancient candlemaker could only work with materials already provided by nature, so that he had to use fats with all their impurities.

The modern candlemaker, by chemical process, removes impurities, which leaves him nothing but the hard and white fat for his candles. Fat changed by this process is called stearine, and from this material are made the star and stearic wax candles. These are extremely hard, and are sometimes called adamantine; do not grease the hands, and give a soft and pleasing light. Spermaceti and wax candles are also made.

The candle has ever remained the unit of light. Sometimes you hear of a light, say gas, being of 25-candle power. The standard is a spermaceti candle, burning at the rate of 120 grains of sperm per hour. There are candles, too, which are made from paraffine, but no candles are used so extensively as the star or stearine.

The great improvements in the manufacture of candles date from the investigations of the French chemist M. Chevreul. He discovered that the fat of tallow was separable from the oil, and the result of the process was two valuable products, stearine and glycerine.

Those who have used the candles of the past can scarcely realize that candles can now be shipped to warm climates. In former days a merchant would as soon have thought of exporting skates or snowshoes to Havana as a cargo of tallow candles; they would have all melted into an indistinguishable mass going across the Gulf of Mexico. But such candles as are made now can be used in the hottest climate in the world.

Candles, however, are not a cheap light. A box of them will cost as much as a barrel of oil, and yet the barrel of oil contains nearly 30 times the illuminating power of the box of candles. The only great advantage of the candle is its safety. Oil and gas are much cheaper. Where candles are used danger from fire is reduced to the lowest.

—The Waterous Engine Works Company, Brantford, Ont., are just shipping seven complete sawmill outfits to Chili, South America. We learn that about 20 per cent. of the entire output of this concern—mostly sawmills and sawmill machinery—is for South American orders. Since they moved into their extensive new premises they give employment to perhaps 300 hands, not spasmodically, but every working day of the year.—*Canadian Manufacturer.*

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THE BAXTER REGISTER

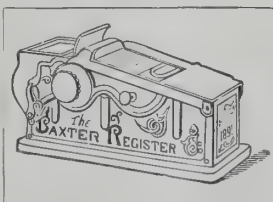
At one writing makes 3 bills (5x4 3/8 inches), two coming out of machine while triplicate is retained inside under lock and key. Thousands in use in every line of trade. In retail business top bill with firm's name printed on can go to customer, second to cashier, third copy retained inside for proprietor's use.

Protects cash and charge sales.

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Used to an advantage in factories for duplicating orders, etc.

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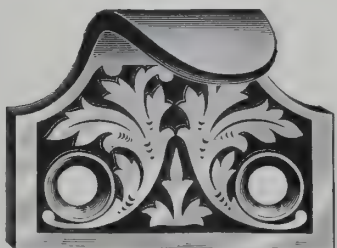
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CHICAGO, ILLS., U. S. A.

WROUGHT STEEL SASH LIFTS.

Several Different Styles.

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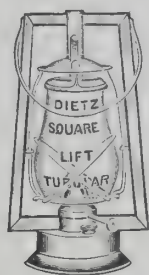


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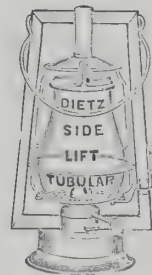
Send for price list illustrating these and a great variety of steel butts, etc.

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79 Chambers St., NEW YORK.

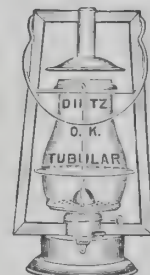
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SQUARE LIFT OR STAR.



SIDE LIFT OR VICTOR.



"O. K."

The above illustrations show three of our principal No. 0 Tin Tubular Lanterns. They are all well made of the best materials, with extra quality globes and burners. The oil founts are drawn from single sheets of tin, and afterward retinned. They are fitted with the latest and best devices for moving the globe out of the way for lighting and trimming.

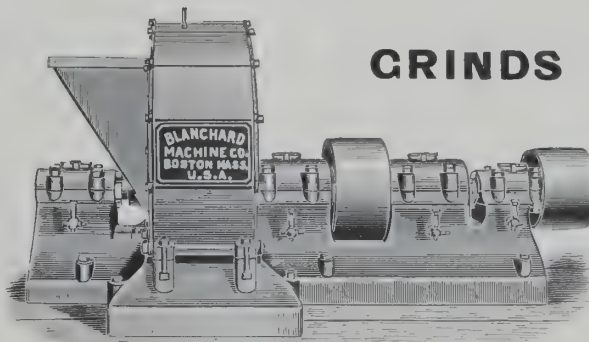
We offer all of these lanterns for EXPORT TRADE at \$7.50 per dozen, no charge for packages, f. o. b. vessel at port of New York, less 50 per cent. discount.

Send on a trial order through your commission man, sending duplicate at the same time to us.

R. E. DIETZ COMPANY, New York, U. S. A.

Send for catalogue (Spanish or English) and complete price list.

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Bones,
Tankage,
Fertilizers,
Glue,
Chemicals,
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and all similar
materials,

DRY or DAMP.

Large capacity.
No skilled attendants
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SIMPLE. STRONG. COMPACT.

Write us with sample of material.

Orders filled through commission houses.

Catalogue "B" on application.

BLANCHARD MACHINE CO., 303 Congress St., Boston, Mass., U. S. A.

American Trolley Cars for Cape Town.

J. G. BRILL & CO., of Philadelphia, are completing a contract for the first trolley line in Cape Town. The firm not only builds the cars, but furnishes the motors, auxiliary engines, pumps and condensers, and erects the powerhouse for operating the line. The poles, wire and the few other necessary things will be furnished by other firms in this country.

The contract calls for 26 cars, and they are certainly samples of art, comfort and luxury. They are all of the double-decked variety, of several sizes. The smallest is 14 feet 6 inches long, and the next largest is 18 feet in length. All of these are mounted on four-wheel trucks, but there are other and larger cars being built which will have double trucks under each car. These are known as "Brill's maximum traction trucks," and are so arranged that about 85 per cent. of the weight is thrown on the larger or driving wheels, thus giving increased traction power to the truck. The motor is also arranged so as to be especially applied to these large wheels and is calculated to develop great speed.

The lower portion of the car is finished in ash and the cane seats, placed longitudinally, give an appearance of coolness not to be despised in a warm climate. Dependent from the ceiling are incandescent lamps of 16 candle power, and the windows are of a size which will allow passengers to see the surrounding country. On the upper deck the seats are not so elaborate. They are of wood, but are as comfortable as most of those to which Philadelphians are accustomed. The passengers on this portion of the car are protected from the sun by a canopy furnished with storm curtains, which can be dropped or raised by a mere motion of the hand. Stairways at each end of the cars lead to the roof decks.

At the works every car is put together in its complete shape. Then it is dismantled, the smaller parts being placed inside the car proper, and the whole is neatly boxed, ready for shipment.

American Machinery vs. Foreign Labor.

MR. V. CADIMER KAPONSTER, of Moscow, Russia, is on an American tour, representing the Moscow Association for Commerce and Industry and the Central Asia Trading and Manufacturing Company. He has for an especial object an investigation of the cotton business of the country. Russia is looking to the direct importation of cotton from America. Her spindles are increasing rapidly every year, a condition brought about by the demands of the people of the recently acquired territory in Asia. She has now about 6,000,000, but as these are increasing rapidly it is probable that a new field for American cotton will be opened.

"You in this country are far ahead of us in the use of machinery," said Mr. Kaponster. "It consequently requires more capital to operate the spinning business in Russia than in America. You can raise wheat more cheaply than we can for the same reason. Of course our labor is cheaper than yours, but our methods do not employ machinery. American wheat is cheaper than Russian and is better graded, both of which points are to your benefit and our detriment. We, however, are introducing American machinery into Russia, and in time may be able to compete with you.

"We have been buying Egyptian cotton, but the prices have increased so much that it led us to speculate in this country. I have just completed a tour of the cotton States, and am greatly pleased with the result. I find the quality much better than I expected and prices are satisfactory. There is some disposition among Russian capitalists to ship the raw material and erect their own cotton compresses. I was delegated by the Cotton Exchange at Moscow to make a thorough examination of cotton compresses used here, with the idea of duplicating them in Russia. I shall make a favorable report."

American Railway Material for the West Indies.

AS an example of the expansion of our export trade for manufactures may be mentioned the cargo of the steamer *Ardandhu*, one of the largest steamers plying between this country and Central America. This cargo was comprised of 4 large 65-ton compound locomotives, 1 switching locomotive, 2 passenger cars and 60 freight cars, all shipped to Jamaica, West Indies, by the New York Equipment Company, of 80 Broadway, New York. It was bought for use on the Jamaica railway now being completed by James P. McDonald & Co., of New York City. The same company subsequently made another large shipment of railway material to Jamaica. This cargo included about 1,000 tons of heavy bridge girders. Being too large to be carried as a whole in the regular steamships running from the West Indies, a special steamer, *Foscolia*, had to be chartered to convey this product of American mills to a country practically owned and controlled by the English. This railway material and these bridge girders are to be used in the extension of the Jamaica railway east to Port Antonio.

"Spruce lumber, from as far away as West Virginia," says the *Philadelphia Record*, "is being shipped from this port to the Argentine Republic. The bark *Lapland* cleared the Custom House recently for Rosario with 34,023 pieces of the best spruce lumber to be found anywhere in the world. The lumber is to be used by the natives in building residences, this quality being considered the best for dwellings. Many of the boards are 12 inches wide and 2 inches thick. The depleted forests in Maine and the British provinces, where now the second growth of timber is being cut for export, compel purchasers to seek elsewhere for forests which have heretofore remained undisturbed."

Chinese Railroad Building.

AN imperial decree has been issued from Peking placing the construction of the railroad from Tientsin to Lu Kuan Bridge, eight miles west of Peking, in the hands of Hu Chii-fen, a native of Kuan Sen province and holding the rank of provincial judge. The cost of the 70 miles of line is stated in the decree to be about \$2,000,000, or more than \$28,000 per mile. An American engineer recently estimated the cost of this line at \$20,000 per mile with rolling stock and equipment complete. The proposed route presents no difficulties, except the necessity of high embankments and numerous drains and culverts in certain localities to cope with the annual floods. It is understood that no foreign capital whatever is to be employed. The decree orders merchants to form stock companies for railroad building, which outlines the present railroad policy of China. There is a strong determination on the part of the Government to exclude foreign capital and foreign control. There is reason to believe however, that this determination will give way before the magnitude of the undertaking, which will bring to light the inexperience of the Chinese managers. There will then be a great field open to foreign railroad enterprise. This field has already attracted great attention, and it will doubtless be eagerly disputed by the representatives of the railroad interests of various nationalities. The American Minister to China has not failed on all proper occasions to urge on the Chinese authorities the pre-eminence of Americans in railroad construction and in the manufacture of all those products which China's railroad system will in time require. It would be much to be regretted should this market be allowed to pass into the hands of others.—*American Machinist*.

Superiority of American Hardware Novelties.

AMERICAN tools and implements are growing in favor amongst the conservative English. Hardware novelties, housefurnishing goods, farming implements, etc., are gaining strong foothold. They are well displayed, and extensively advertised. Carpet sweepers were prominent everywhere, not alone in the windows of city shops, but also in those sleepy little ones in the quiet little towns we passed through. It showed how wide-awake the merchants were, in at least one instance, in appreciating Yankee brains and enterprise. At many places in the English Lake region were seen American haying tools used side by side with those of Sheffield make, and what a contrast! With but little difference in price, the former were, without exception, better finished, lighter, stronger, and in every way better made than the English goods. At Penrith was seen quite a display of hayforks, part home product and part of American manufacture. The shopkeeper, in speaking of the latter, said that from their great excellence, they were selling even better than the English. Such an admission of Yankee superiority from a conservative Englishman means much, and is prophetic of future business. While from the standpoint of durability no better, perhaps, still, finish and everything considered, the American article is usually superior. That, with equal price, ordinarily will insure sale once the inbred conservatism of John Bull is overcome, the greatest difficulty foreign manufacturers have to encounter.—*Iron Age*.

New American Armor-Piercing Shells.

A PRESS report from Washington, D. C., under date of the 26th ult., gives the following account of the trial of the Johnson steel shell: "At the proving ground yesterday a cast-steel shell of six inches calibre was fired clean through a seven-inch Harveyized nickel-steel plate, through the heavy oak backing and 12 feet into the bank of clay behind. This performance has never been equalled by any projectile of like calibre in the world.

"The shell was made by the Johnsons, at Spuyten Duyvil, New York. It was of cast-steel, treated by a secret process. In addition, it had a cap of soft forged steel. When the shell slipped so easily through a plate of known high quality the experts doubted the evidence before their eyes, and one of the Wheeler-Sterling shell, all steel, armor piercers, of the best quality and equal to the best European shell, was selected and fired at the same velocity at the same plate. It was smashed up on the face of the plate after a slight penetration. Then another of the Johnson shells was fired at the plate. The result was almost precisely the same as with the first shot.

"The naval experts are much pleased with the test. They say that these shells can be made much cheaper than the forged steel armor-piercing shells; that they can be made much more quickly, and that they appear to be superior in every respect."

American Interests in the Transvaal.

MR. ERNEST A. WILTSEE, superintendent of the Consolidated Gold Fields Mining Company, of Johannesburg, who recently arrived in this country, has given considerable valuable information concerning the Boers and their business affairs. Referring to American interests, he says:

"So far as the technical features of the mining industry are concerned, Americans are predominant. The operation of the principal mines is directed by American engineers, and, in addition, an enormous and rapidly expanding business is being done in the importation of American machinery, mining tools, lubricating oils, timber, and a hundred other things of prime importance in the mining business. In the matter of timber alone, less than 20 steamer loads from the forests of Oregon are monthly used in the mines. There are now two steamer lines running direct from New York to the Cape, whose vessels go loaded with American goods of all kinds, and yet I find that the people here have only a very vague idea of the magnitude of our interests in Africa."



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LIGHT. STRONG. FAST.

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Absolutely Reliable!

GOLD MEDAL, NEW ORLEANS, 1884-5.

EIGHT FIRST-CLASS AWARDS.

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Pure White and Beautiful Tints. Will not rub or scale from the wall. Invaluable in cleansing and disinfecting walls impregnated with germs of disease. Mixed in five minutes ready for the brush, by the addition of water only. Five pounds will cover with a good body 500 square feet on hard-finished walls. Send for sample card and prices to

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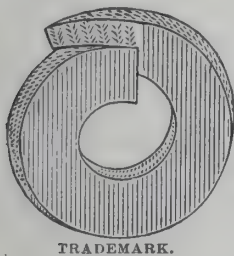
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Twist Drills made by this Company are **HOT FORGED** by an Entirely New Process.



They are **TOUGHER** and **STRONGER** than the **OLD STYLE** Milled Drills.

Catalogues sent free
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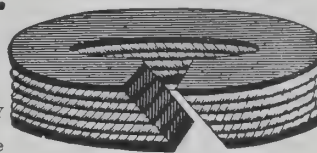
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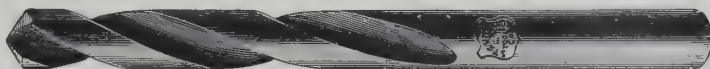


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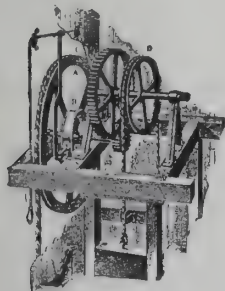
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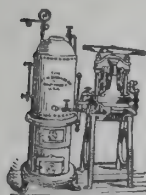
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THE BOSS TOOL FOR BUILDING WIRE FENCES.

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This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

Manufacturers of the Celebrated "Star Brand" Shears and Scissors, and "Elm City" Shears in large variety.
BEST QUALITY ONLY.

Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

A French View of American Industrial Art.

AT the request of the director, Henri Roujon, of the French Beaux Arts, Mr. S. Bing, noted as a collector and expert in art matters, has made an appreciative and interesting report on the present condition of American art and the outlook for its future development, which he has embodied in an instructive pamphlet entitled "La Culture Artistique en Amerique." The part of the report which is of predominating interest to the jewelry and kindred trades is that devoted to the domain of industrial arts in which, Mr. Bing says, the Americans, by the application of aesthetic principles to objects in common use, have made the most sudden, characteristic and startling advance. In this connection he says:

"The theory on which they have proceeded has been something like this: First, to enrich the store of useful materials, with every substance to be found in nature, even the humblest and lowliest, which our conservative habits had hitherto disdained. In fashioning these materials to understand thoroughly all known processes in all their applications. Then, having learned and analyzed everything, having acquired every technical secret, every trick of the trade taught by the experience of centuries, to forget completely the use made of them in the past, to put out of mind all recollection of hereditary forms; in a word, to place old and tested knowledge at the service of a new spirit, with no other guide than the intuitions of taste and the natural laws of logic."

This is a broad and sound deduction which finds potent premises in the American silverware in common use, the simplicity and elegance of which arouse unstinted praise from Mr. Bing. As in manufacturing in America, machine work enters to a degree, perhaps unparalleled by any other country, the jealous manufacturers of Europe are constantly howling that the machine is an enemy of art. This dogma is attacked by Mr. Bing with the following words:

"If beautiful models, well thought out and proportioned logically with a view to reproduction are used machinery may become a powerful factor in the improvement of public taste. By means of it a single conception of genius may make infinitely common the delight in pure forms and prevent the production of a multitude of meaningless creations which aspire to be art because they are the result of more or less laborious and more or less skillful manual labor."

While recognizing the remarkable achievements of America in the domain of industrial art, Mr. Bing gives expression to some conclusions which are not to be accepted as the last word on the subject. He says:

"In spite of the deep faith of America in the individuality of its race, in spite of its affected contempt of vulgar prejudice, the higher society remains dependent on European fashions, especial in outward display, where the 'what will people say' of society comes into play. At present great establishments cannot subsist with the support of only connoisseurs of taste. They must, therefore, yield constantly to the demands of a tradition that is not very enlightened, in order to live."

There are no truer industrial arts than the silversmithing and goldsmithing. They are among the most ancient of arts, they are saturated with tradition, and they are the very embodiment of outward display. According to Mr. Bing, American silverware and jewelry as well as dress which, we admit, he mainly refers to in the above, are designed as echoes of reigning fashions in Europe. But this is not a fact. American silverware of to-day is thoroughly original, while American jewelry follows the Paris styles in only a few *outré* instances, which have little or no effect upon the industry as a whole.

Undeveloped Natural Resources.

THE dependence of an agricultural community that has not developed its natural resources upon manufacturers in other States is strikingly illustrated in the following description of a Southern soldier.

This description cannot long be true of the Southern States, because their new industrial system, based on free labor, is giving ample encouragement to manufacturing enterprises in every direction. There are, however, many communities in the world where the conditions are much the same as described for this Southern burial. The people in all such communities need to have their industrial condition pointed out to them, as the writer of the following has shown a Southern community its condition.

A well-known Southern writer describes the funeral—rather the burial—of a citizen and war veteran in the following quaint style: "They buried him in a marble quarry; they had to cut through solid marble to dig his grave, but the tombstone they put over him was brought from Vermont. They buried him in a pine forest, but the pine coffin they put him in came from Connecticut; they buried him within touch of an iron mine, but the nails in his coffin and the shovels with which they dug his grave were imported from Pittsburg; they buried him in the midst of the finest sheep-grazing country in the world, but the woollen bands on the coffin were made in the North. The South did not furnish one thing on earth for that funeral but the corpse and the hole in the ground.

"They threw the clods down on his coffin, and they buried him in a New York coat, a Boston pair of shoes, a Chicago vest and a Cincinnati shirt, giving him nothing to remind him of the State in which he was born, and for which he fought for four years, but the chilled blood in his veins and the marrow in his bones."

This method of illustrating the predicament people are often in who buy everything and produce nothing is not new, but has the force of truth to help make it impressive. The quoted matter does not do any injustice to a good many Southern communities that ought to be advanced well as manufacturers.

Rochester, U. S. A., Shoes the World.

AMERICAN manufacturers are awake to the importance of gaining markets for their goods in other lands. Our country is large, but all the rest of the world is larger, and the ingenuity of American inventors, the skill and intelligence of American workmen, can produce articles which sooner or later must secure ready purchasers abroad. There is no department in which Europe stands in more need of American taste than in boots and shoes. It is painful to see the footgear in which the inhabitants of those unhappy lands are doomed to walk through life. Their shoes are big, they are clumsy, they are ill-fitting, they have hardly escaped from that prehistoric period when the shoemaker disregarded the distinctions which the Creator had established, and turned out the same shaped boot for either foot.

Man's foot, and still more woman's foot, was designed by Providence for beauty as well as for use, and, as in nature, the color of plumage which is most beautiful is often most serviceable to the bird, so the boot which looks best is usually the most comfortable to wear. The æsthetic eye is pained as its glance falls upon the feet of foreigners. Parisian women indeed are sometimes well shod, but never the man, while the deformity of the English foot, as it is exhibited in the street, is familiar to all Americans. These things should not be; the pleasure derived by any rightly constituted man from an inspection of the neat-looking foot of woman, is legitimate and wholesome and should no more be checked than any other innocent and æsthetic pleasure. Men's looks are less important, but there is a certain flouting of Providence in disguising by hideous proportions the comely lines which nature has given its handiwork. The foreign shoe disguises the arch of the instep, it has no beauty of outline, it is hard to wear and hideous to see.

Perhaps it is not strange that the shoemaker's art should, in this country, have reached its highest development, for the American foot tends to a certain narrow length, which invites a well-made shoe. We are the descendants of Europeans, but it is said that under the influence of our new surroundings our members resemble those of the original inhabitants of the soil; our hands and feet are approaching the Indian type and becoming long and narrow. In Paris, where they know how to clothe the hand, they now turn out gloves of a certain type for American women, longer and more slender than those which fit the hands of their European cousins.

It is pleasant to learn that American-made shoes are conquering the prejudices of other nations, and that the sales of our boot manufacturers are steadily increasing abroad, and, as among all American cities, Rochester is known for its excellence in that manufacture. Its merchants are already beginning to supply to foreigners the blessings of a good shoe. One house recently began with a few customers and already has fifty foreign shops clamoring for its goods. Other establishments are sharing in this trade, and with proper enterprises innumerable boxes of boots and shoes will soon leave the Rochester station en route to England, France and Germany. At first the foreigner gazes on footgear, so different in its proportions from the monstrosities in which he all his days has walked, and asks if such a work of beauty can fit the human foot; he makes the experiment and finds with amazement that it is the only shoe which really does fit. The Rochester manufacturers can reflect with just pride that while they are adding to their own wealth by furnishing Europe with their goods, they are also teaching foreigners not to disfigure what the Creator has made.

A Retaliation in Insurance Law.

SUPERINTENDENT of Insurance James E. Pierce, of New York, acting under the provisions of the State insurance laws, has notified the Prussian companies transacting business in the State that their corporation certificates would not be renewed during 1896.

This was done in compliance with the so-called retaliatory law which was signed by the Governor last month.

The bill provides that whenever any foreign country refuses admission to any New York State company, when that company has a certificate of solvency and good management from the Superintendent of Insurance, and has complied with any reasonable law of that country, it is made the duty of the Superintendent to forthwith cancel the certificate of authority of such foreign companies doing business in New York.

The regulations of the Minister of the Interior of Prussia were so unjust that the Equitable Life Assurance Society, of New York, refused to comply with them and withdrew from the country. The New York Life Insurance Company and the Mutual Life Insurance Company did, however, at great expense comply with these requirements, after which the companies were expelled from the Kingdom of Prussia.

The companies which Superintendent Pierce refuses to license are the Prussian National Insurance Company, of Stettin, and the Aachen and Munich Fire Insurance Company, of Aix-la-Chapelle.

Superintendent Pierce also notified the attorneys for the Madgeburg Fire Insurance Company, which had made an application to do business in New York, that he will refuse the application.

—Every one who has to do with iron piping sees the time when he would like to turn a piece of gas pipe with a monkeywrench, and tries it only to be balked. A little wrinkle that will make a go of it is to put a piece of heavy wire or small-bar iron between the jaw of the wrench and the pipe, so as to jam the two together. It is not as good as a pipe wrench, to be sure, but makes a satisfactory substitute on a pinch.



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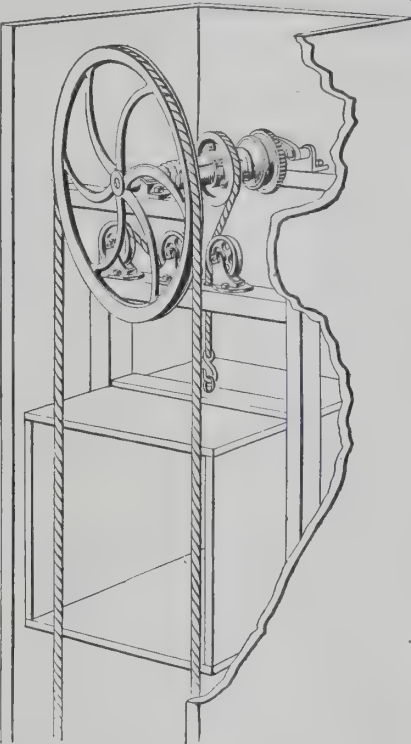
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LEADS THEM ALL,

So our testimonials say.

We guaranteed this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

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For yachts. Brightest color made.

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A perfect substitute for pitch

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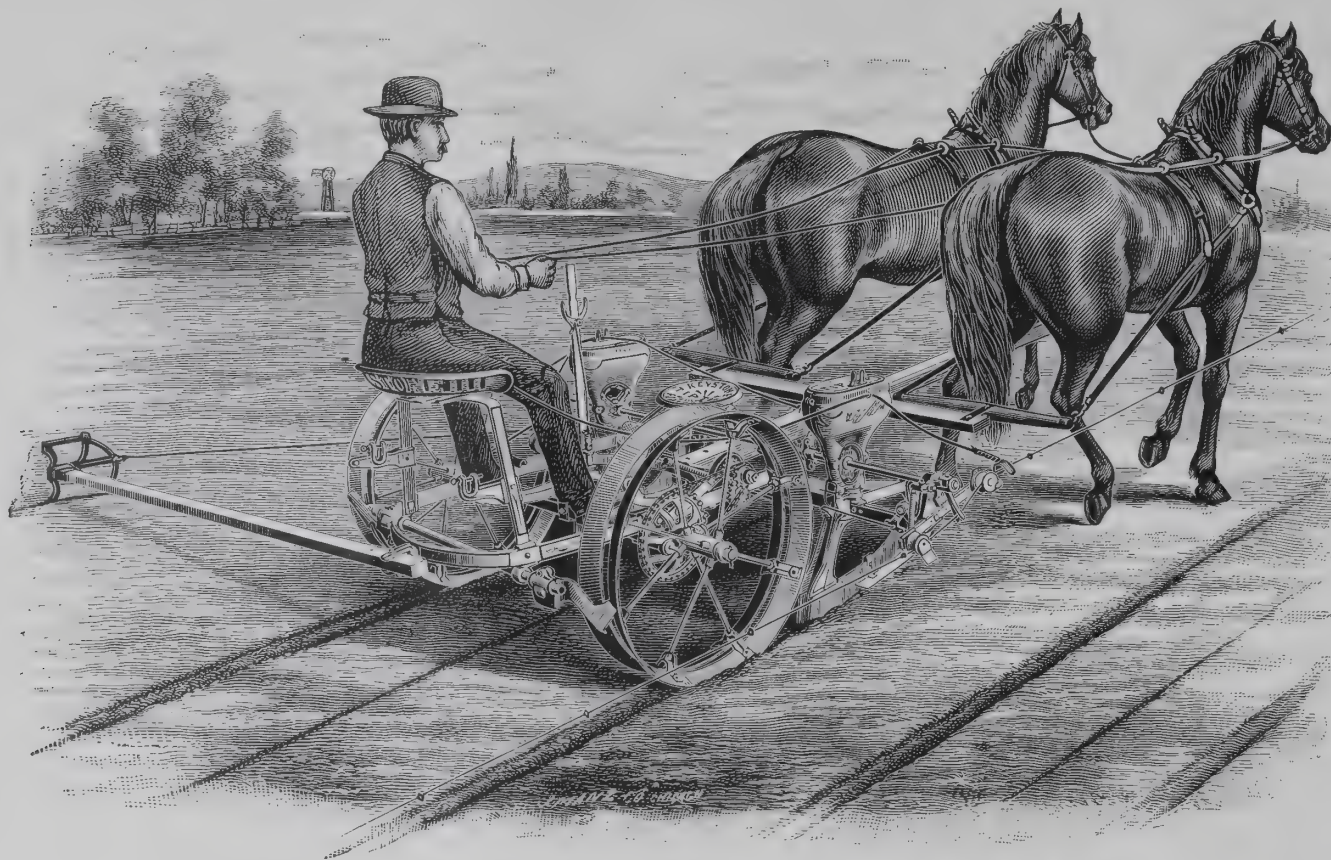
REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—it is in splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shya."





"Tip Top" Corn Planter.

PLANTS TWO ROWS
AT A TIME IN EITHER HILLS
OR DRILLS,
15 TO 20 ACRES PER DAY
OPENS THE FURROWS,
DROPS THE SEED,
COVERS AND ROLLS IT.
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IS STEEL AND IRON.
IS NEAT, STRONG, DURABLE.

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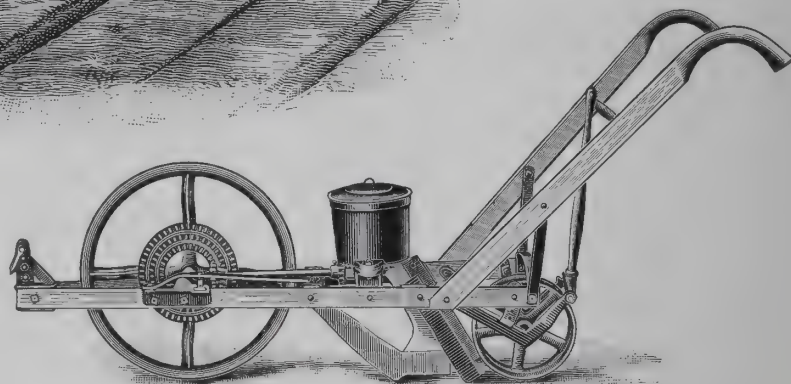
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ONE-HORSE DRILL FOR MANY KINDS OF SEED.

Sowing Seed. —

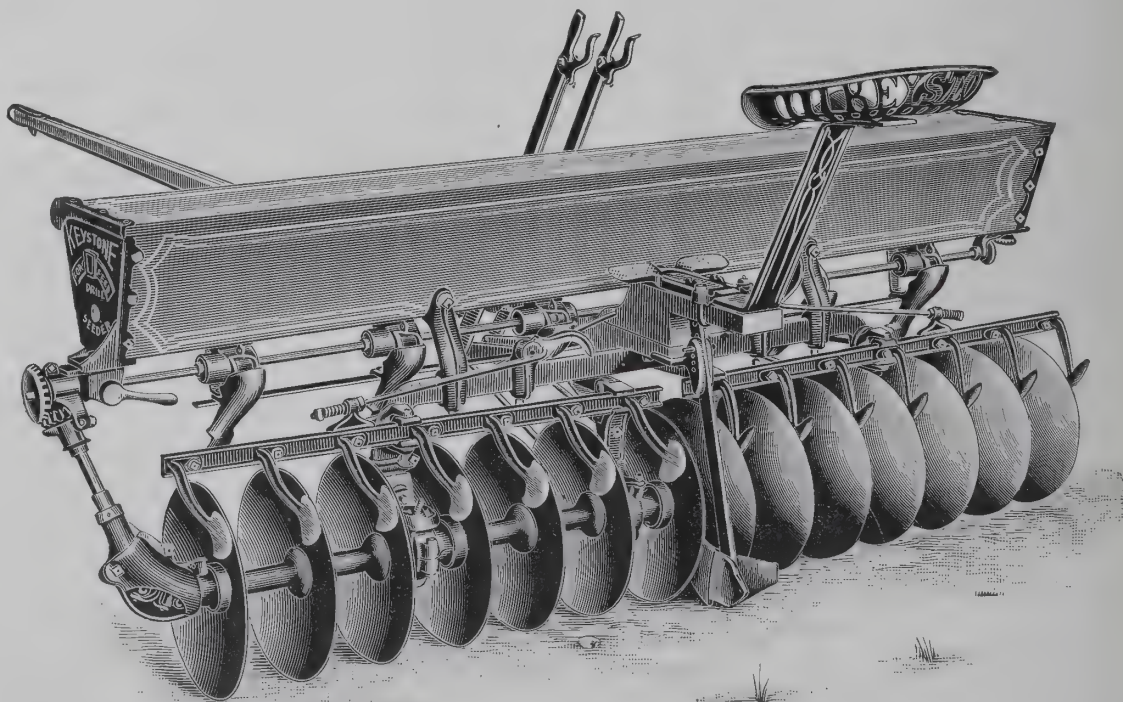
THERE has not been a great deal of improvement over primitive methods of putting the seed grain in the soil until recent years.

The old way, and, in fact, the present way in many localities, is to sow the grain broadcast and then go over the ground again one or more times with brush or harrow and mix the soil and seed together. Even when thus done in the very best manner much seed is not covered at all and much is too near the surface. This process is simply a mixing, nothing more.

With the "Victor" Disc Harrow with Seeder Attachment, here shown, the work is all done at one operation; the seed is sowed and the soil turned over it, and for every foot the machine moves the work is complete that far. In fact, it often saves all plowing. Manure and fertilizer can be turned under also.

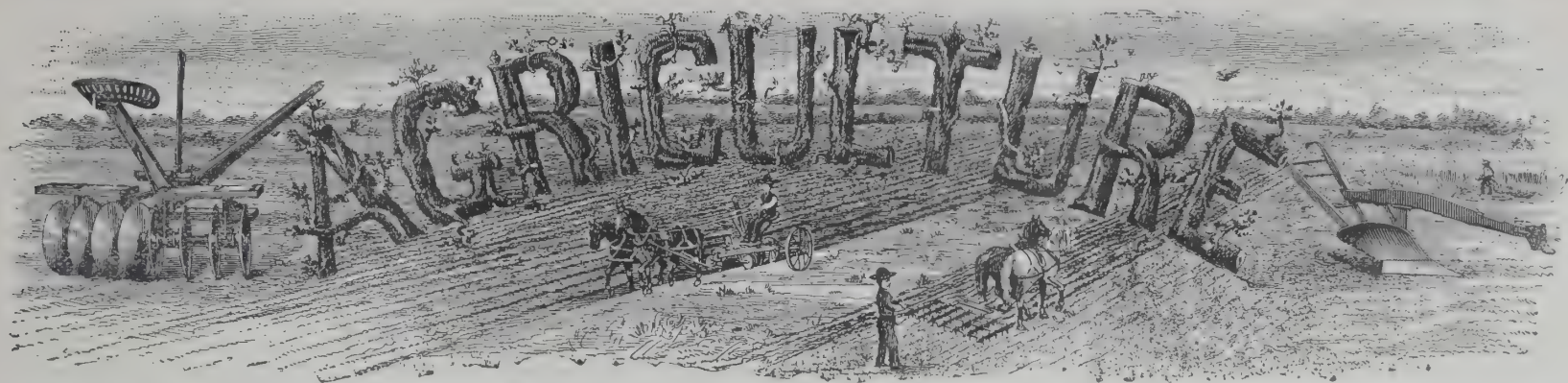
More than this, the Seeder Attachment can be removed (or allowed to remain) and you have a machine that cannot be surpassed for pulverizing the soil at any time and for any purpose. This outfit has many uses.

The Seeder is a force feed with simple and accurate feed cups and a positive driving device. The Disc Harrow has ball bearing hangers, double levers, the best middle cut ever used on a Disc Harrow, and is all steel and iron. This is but one of our large line of machines, and we will be pleased to send our complete catalogue and price list free of charge to any one who will write for it.



KEYSTONE MANUFACTURING CO.,

STERLING, ILLINOIS, U. S. A.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

Advantages of Sugar-Beet Cultivation.

IN the United States, where the soil, climate and other circumstances affecting the industry are approximately so closely akin to those of Canada, the production of beet sugar has passed the experimental stage, and has become one of the permanent industries of the country. The beet flourishes in a soil that has been worked to considerable depth, and the crops that follow derive advantage therefrom, their yield being greater and the cost of preparing the soil for their reception being reduced almost to a minimum. In consequence of the constant weeding during the sugar-beet development the next crop will have few weeds to contend with, and hence derives the entire benefit from the plant foods of the soil. Many agronomists go so far as to assert that the beneficial effects are such that the beets may be considered as having been obtained free of cost. The residuum pulp from factories feeds cattle, and means cheap milk, butter and meat; furnishes fertilizers gratis, and by the feeding of these pulps, combined with necks and leaves, all the plant foods, with the exception of that contained in residuum molasses, is returned to the soil. Besides this there is a social question too frequently overlooked. The farmer, instead of being brought in contact only with other tillers of the soil, is forced through circumstances to have dealings with chemists, engineers and men of education at the factory, which stimulates his ambition for his children, and the rising generation thus becomes of a higher standard than if the factory had not been started in the locality.

The transportation of beets, of raw and manufactured material of the factory, necessitates the building of railways, from which the farmer derives an advantage by his farm soon becoming divided off in lots. He avails himself of the increased value of property, makes money in a hundred different ways, and sees a certain future not only for his land, but for all his belongings. The cultivation of beets demands more labor than most crops; hence it prevents the farming districts from becoming depopulated for want of occupation. The factory working during the Winter, many of the hands who were employed on the fields during the Summer find work there during a period of the year when they would evidently be unable to find employment elsewhere. The fact that the women and children can do the work of weeding increases the actual money returns for each family, and the work being done in open air is healthful and excellent exercise when the boys are home from school.

In Europe it is admitted that for every acre devoted to beets there is a money return just double that possible to obtain from any cereal. These examples could be continued almost without limit. It should be remembered that sugar from beets may be profitable or not to the manufacturer, but beets cultivated with care always mean in the end a fortune for the farmer. He does not always realize the fact, but the truth is the tiller, after a term of years, turns his capital over many times, which the capitalist is never able to accomplish when extracting the sugar from beets furnished him.

Exports of American Carriages.

EXPORTS for 10 months ending with November 1, 1896, show gains as follows:

British North America, 1895, \$121,246; same time, 1894, \$76,156.

Mexico, 1895, \$380,728; in 1894, \$89,629—a remarkable gain.

Central American States and British Honduras show a gain closely following the lead of Mexico, 1895, \$225,976 as compared with 1894, \$48,067.

West India Islands, except Puerto Rico and San Domingo, but including Bermuda, bought in 1895 \$164,876, against \$153,915 in 1894.

Argentina purchased \$59,720 in 1895, and in 1894 but \$39,093.

Brazil imported in 1895 \$269,111, and in 1894 \$249,198.

Other South American States made a straight increase, the trade being \$62,335 in 1895 and \$59,974 in 1894.

British India and East India purchased \$4,657 in 1895 and \$3,615 in 1894.

Asia and Oceania show a decided gain, being \$59,909 in 1895, against \$16,941 in 1894.

Africa also made a large gain, taking for 1895, \$120,371, and in 1894 \$61,476.

These increases are plainly indicative of the high appreciation in which American carriages are held wherever people have learned to appreciate their many good qualities by actual use. They give promise of a very heavy increase in 1896, if the universally expected improvement in trade conditions is realized.

Irrigation by Windmills.

HON. W. B. SUTTON, secretary of the Kansas Irrigation Association, paid a high tribute to the windmill in the report he read before the fourth annual meeting of the association at Garden City. He said in part: "We are accustomed to associate the idea of irrigation with dams in rivers and ditches leading the water to great distances, and to regard a windmill as a machine only suited to pump water for the kitchen; but windmills can be made large and strong, and can operate pumps of corresponding capacity, and, if the water is there, can lift immense quantities of it to the surface. When you own and control your own irrigation works you are exempt from many accidents and inconveniences which beset those who depend on ditches. You are independent, are not subservient to a higher power which necessarily holds arbitrary control over the water in the ditches.

"Irrigation by windmills where the water-lift is not too great will be found cheaper and more satisfactory than from ditches. As a rule your supply is not affected by drought, nor rendered uncontrollable and destructive by floods. The highest civilization in ages past has clung around irrigation works. The future will not prove an exception to the rule, and the day will come in our history when the highest form of rural intelligence, culture and prosperity in this country will be found under the shadow of the windmill or its substitute.

"Men become more humane, broad-minded, by closer association with one another, provided, if one thing is added—a sure subsistence for each without preying upon the others."

Development of the Barb Wire Industry.

IN May, 1874, J. F. Glidden, a farmer of DeKalb County, Illinois, U. S. A., was granted a patent on barbed wire, the essential feature of which was "coiling a short piece of wire between its ends around the fence wire," a device which has never been deviated from in the slightest particular in the construction of the now world-famous Glidden steel barbed fence wire, and has been adopted substantially by all manufacturers in barbing wire. The length of time it was under consideration as a national problem and the millions of treasure that was wasted in fencing before its advent give it rank as one of the most beneficial products of American genius.

The first Glidden wire that was manufactured was produced by remodelling an old coffee mill to be used in coiling about the main wire the barbs, which had first been cut with beveled points with a chisel, and when a piece 20 or 30 feet had been prepared in this manner laying alongside of it a piece of smooth wire, hitched to a tree at one end, attached to the shaft of a grindstone at the other, which by turning gave it the twist, Mrs. Glidden furnishing the motive power for use on the crank. It is a striking test of the utility of barbed wire as fencing, that in 1874, 10,000 pounds were made and sold; in 1875, 600,000 pounds, and this production has been constantly increased from year to year, until in 1894 the actual production was over 200,000 tons in the United States.

Freight Charges on Machinery Shipped to France.

M. FENWICK, of Paris, states that the charges on machinery from New York to Havre are about \$10 per ton, plus 5 per cent., and that in every instance where a single case or package weighs over 3,000 pounds a charge of at least \$25, and perhaps more, is exacted for the use of a derrick to unload the package from the ship.

Machinery shipped by the German steamers is charged for at the rate of only \$4 per ton to Hamburg, and the charge to Antwerp is only \$6 per ton; but the French customs law requires that a special extra import duty be paid on shipments which have been previously delivered at any foreign port and then reshipped to France. This extra charge is made for the protection of the French line, and in order to compel French importers to use that line; and, there being no effective competition, the French line naturally charges up to the limit of its protection, which it is plain to see in this case operates very decidedly against American trade with France, in other things, we suppose, as well as in machinery. Perhaps, if American machinery trade with France is to be developed, it might be well for some effort to be made to correct this abuse.

—American Muchinist.

Electrical Power Transmission.

RALPH L. MONTAGUE, writing on the above subject, says: "Many mine owners are unable to decide whether they can adopt electricity economically. The following accepted figures will soon answer that question: At Niagara Falls, the most modern of all transmission plants, power has been leased at \$8 per horse-power per year, for days of 10 hours, in 10,000 horse power lots. For 24-hour days, an electric light and power company that uses water power as a prime motor, could charge \$100 per horse-power per year in localities where good steaming coal costs \$4 per ton, and get a large percentage of the business. Then again, where there is a centrally located power-house and separate motors at work in various parts of the plant the annual expense account is much less for attendance, etc., than if steam was used instead of electricity.

"Without going into a lengthy discussion about other means of transmitting power we will assume that a plant is to be erected to transmit power from a given point to a mine where a stamp mill, hoist, drills, traction and light will be needed. If the distance to be traversed by the line is short, *i. e.*, less than 3,000 feet, it would be advisable to use a direct current system of standard voltage, *viz.*, 500 volts. But if, on the other hand, as is the case in the majority of mining propositions, the distance between the power-house and the mine is greater than 3,000 feet, then to insure economy it is necessary to utilize an alternating current system of high voltage.

"To the lay reader the terms 'volt' and 'ampere' may sound confusing; the electrical unit of pressure is termed a volt; of amount of intensity, an ampere. A good simile is the miners' inch of water. The same results can be obtained from 1,000 miners' inches at 100 feet head, as can be gotten from 100 miners' inches at 1,000 feet head. The same law applies to electricity, 1,000 volts and 100 amperes give the same power as 100 volts and 1,000 amperes, but in correctly gauging the size of a wire to carry a given amount of electricity, the amperes (or amount) is the item to figure on, just as in hydraulic work the inside diameter of a pipe is termed by the amount of water that will have to flow through it, and again, the strength of a pipe is determined by the head or pressure it will have to stand; so likewise the insulation is determined by the voltage on the wires.

"The cost of a copper wire to carry a given current with a loss not to exceed a specified limit increases as the square of the distance. To be more plain, if the cost of copper for 100 horse-power a distance of one mile with a 10 per cent. loss was \$60, to transmit the same power with the same loss per cent. a distance of 10 miles the copper would cost \$6,000. But on the other hand, if the voltage is increased with the distance the cost of the copper is kept down as is shown in the following table:

Distance.	Voltage.	Loss, per cent.	Supposed cost.
One mile	100	10	\$60
Ten miles	100	10	6,000
Ten miles	1,000	10	60
Twenty miles	2,000	10	60
Twenty miles	100	10	24,000

Wind-Power for Irrigation.

"THE system of wind-power and pump-water supply has come in to fill a demand that overbalances all other irrigation claims," says G. W. Hervey, in *Cultivator*. "The great body of our agricultural lands are not accessible to the flowing stream, and must depend upon the under-water supply. The cheapness of pumping plants and the ease of reservoir construction has practically solved this question, and made it possible for the farmer, under favorable conditions of weather, to provide his household with the necessities of life, and successfully maintain his dignity as a producer and as a bread earner. The relationship between the tiller of the soil and the balance of humanity is drawn very closely together when the land fails to yield up its support to man. Then the eyes of the world are turned to the farmer in a realization that from this source is the foundation upon which is built all the business prosperity. Without the farmer there is nothing produced upon which to carry on business. The mills and the factories cannot operate, and without moisture the farmer cannot till the soil. The question of moisture supply for the land is the greatest question before the American people to-day. It is the foundation stone of business prosperity. Without water there can be nothing, and with it everything is made possible."

Machine vs. Intelligence.

THE machine has run ahead of the human intelligence which operates it. A Western paper manufacturer rebuilt a mill which was burnt some months ago and set up therein two Fourdrinier machines, which, according to the contract entered into by the builder, are to run at the speed of 400 feet per minute. One of them was started up last week at a speed something less than that which the contract called for. The machine worked all right, but the attendants were not accustomed to such fast running, and it embarrassed them. It became necessary to slow down the machine in order to allow the tenders to get acquainted with it. The 400-feet-a minute machine has come to stay. And it is only two years since unbelieving foreigners were sure we were drawing the long bow, when we told them of machines in America that were running at the rate of 300 feet a minute.

—The St. Charles Car Company, St. Charles, Mo., U. S. A., have booked an order from the Mexican Central Railroad for 200 cars.

Colonial and Foreign "Indents" and Their Treatment.

ONE of the most fruitful incidents arising out of the keen competition among London agents and buyers for colonial and foreign buyers is the growing disregard of the expressed wishes of their clients as set forth in their indented orders. We can best explain the lesson we wish to convey by relating a fact—one of many—recently brought under our notice. A well-known Midland hardwaremaker, whose goods have a well-deserved reputation in the colonial markets, called upon a London merchant in the ordinary course of business, when a dialogue somewhat after this fashion took place:

Merchant: "Good day, Mr. Brown. Very glad to see you. By the way, I have an indent here in which a Sydney client specifies some goods of your make."

Brown: "Very glad to hear it. May I take the order with me?"

Merchant: "No, certainly not, unless you can liberally increase your discounts. I can buy an article which will answer my client's purpose much below your price."

Brown: "But surely, sir, in that case you would be disregarding your client's expressed wishes. He has bought my goods for 20 years; he knows my prices, he knows my quality, and he is prepared to pay for what he orders. I cannot reduce my price without reducing my quality, and that I am not prepared to do."

Merchant: "Then I am very sorry, but I must pass you this time. I shall send an article of cheap make, which, though not so good as yours, will no doubt answer the purpose."

Brown: "Oh, I see! You treat your customer as though he were a child. You know his business better than he does himself. You think all the commercial wisdom of the world is located in London. In that case, although I do not seek direct dealings, I shall write to your customer and solicit his business without the intervention of your house or any other."

In the end the manufacturer obtained the order, which was all along his rightful property, although the agent or intermediary tried by coercion to deprive him of it. It is a notorious fact that this kind of business is being largely cultivated by certain foreign and colonial merchants—thank goodness, there are many honorable exceptions!—in the city of London. It is an open secret that the buyers in these houses are open to the seductions of "palm oil," and that by these means honest trade is being diverted into dishonest channels, buyers abroad are being cruelly deceived in goods they pay for but do not get—inferior qualities being palmed on them—and the fair fame of many a painstaking and honest manufacturer is ruined because of the spurious goods purporting to be of his make being sold in the colonial and foreign markets by these unscrupulous exporters. They are, as we have said, in the minority, and it would not be an impossible task for manufacturers of repute to decline to supply them, after the first proof of their dishonesty, on any terms whatever. By so doing the manufacturer would be not only standing up in his self-defense, but he would also be doing an act of simple justice to those merchants who honorably and scrupulously maintain the proud and noble traditions of their ancient calling.—*The Hardwareman, London.*

A Few Export Gains.

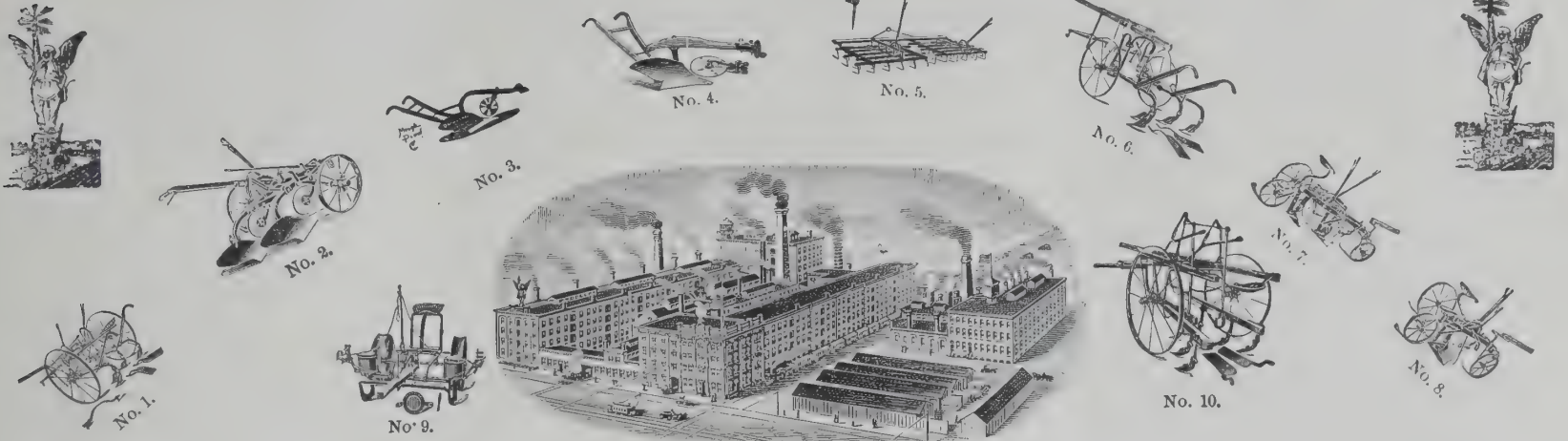
THE following shows the total exports in 1895 and the increase over 1894, for the articles enumerated:

	1895.	Increase.
Agricultural implements.....	\$5,319,885	\$554,092
Carriages and street cars	1,626,406	25,396
Cars, passenger and freight.....	1,021,865	325,499
Clocks and watches	1,303,166	104,124
China ware.....	24,872	8,562
Glass and glassware.....	1,002,328	84,809
Gunpowder and other explosives	1,348,364	180,635
India rubber and gutta percha, manufactures of.....	1,676,619	140,475
Iron and steel and manufactures of.....	35,071,535	5,127,806
Firearms.....	845,110	205,011
Locks, hinges, and other builders' hardware,	2,766,532	313,800
Machinery not otherwise enumerated.....	12,115,118	1,399,598
Nails and spikes	579,435	52,127
Scales and balances.....	387,710	95,655
Sewing machines.....	2,988,006	923,219
Steam engines.....	2,741,465	311,830
Stoves and ranges.....	289,426	48,490
Wire.....	1,375,195	70,401
Lamps and chandeliers.....	682,469	24,576
Leather and manufactures of	18,492,760	3,604,692
Musical instruments.....	1,153,441	85,491
Paper and manufactures of.....	2,412,763	329,419
Wood and manufactures of.....	29,943,154	1,844,184
Wool and manufactures of.....	782,885	46,525

—The large artesian well recently sunk at Chamberlain, S. D., is now at work running the electric light and power plant in that town. The water is utilized through a three-inch nozzle, playing upon a Pelton water-wheel. The present plant supplies 275 32-candle-power incandescent lamps, but there is sufficient reserve power to run double this number.

MOLINE, ILL.
U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
U. S. A.

MANUFACTURERS OF THE BEST GRADES OF

Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes. Beet Machines. Etc.

No. 1. Dandy Combined Riding and Walking Cultivator.
No. 2. Wheel Walking Gang Plow, 24 inches.

No. 3. Steel Beam Plow with Rolling Coulter S. B.
No. 4. Wood Beam Plow with Rolling Coulter.

No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.

No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

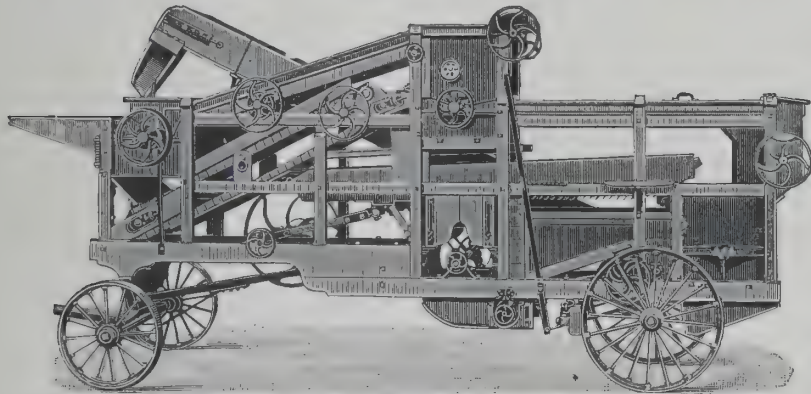
Foreign Agencies:

PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.

THE AULTMAN & TAYLOR MACHINERY COMPANY

MANSFIELD, OHIO, U. S. A.

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STATIONARY, PORTABLE AND TRACTION ENGINES,
Horse Powers,
Tubular Boilers and Iron Tanks**

OF ALL KINDS AND SIZES FOR LOCOMOTIVES

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Gold Medal Awarded
"MAIZENA."

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

ENCOMIUMS TO ITS MERITS:

LONDON, 1862. "Supremely Excellent."

BRUSSELS, 1876. "Notably Excellent."

PARIS, 1877. "Perfection in Preparation."

CENTENNIAL, 1876. "Notably and Absolutely Pure."

PARIS, 1878. "Best Produced of Its Class."

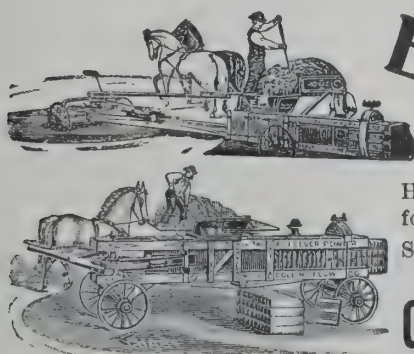
FRANKLIN INSTITUTE. "Superior Merit."

Paris Exposition,
1889.

Put up exclusively by THE NATIONAL STARCH M'FG CO., successor to (Messrs. DURVEA) GLEN COVE MANUFACTURING CO., N. Y. U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and 1/2 lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

None GENUINE without "DURVEA" appearing on the face of Package.

HIGHEST AWARDS WORLD'S COLUMBIAN EXPOSITION.

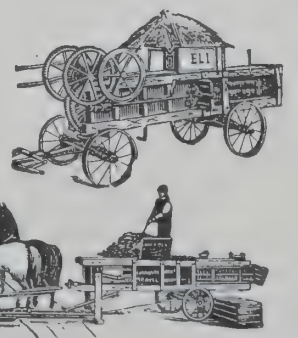


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Hay and Straw Presses
for Horse and Steam Power.
Special attention to Export Trade.
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different shapes and sizes of Riding and Walking**PLOWS.**

Send for Catalogues.



A Century of United States Commerce.

THE growth of the foreign trade of the United States from 1791 to 1895 inclusive has been broadly outlined in a chart prepared by the Treasury Department. It is an interesting exhibit of progress rounding out from small beginnings into a circle that, if far less than it will be, is a wonderful record as it is. The export trade of 1791 represented less than \$20,000,000. In 1835 it reached the \$100,000,000 mark, and in less than two decades after aggregated \$200,000,000. In 1860 the figures reached \$300,000,000, and six years later, after a serious recession of business, the export trade of the year made a total of \$340,000,000. In 1874 the tally was \$570,000,000. In 1881 they rounded out a total of \$830,000,000. These figures fell to \$665,000,000 in 1886, and in 1892 boomed into a total of \$1,015,000,000. The thermometer again fell, and in 1895 made a showing of less than \$800,000,000. As these figures represent the sale of American products, they illustrate in a vivid way the industrial development of the country, its rapid settlement and the wave of enterprise sweeping over its huge areas of territory, making fields of its solitudes and granaries of its prairies. History has no precedent for this rapid home-making and mill-building American epoch. It was not evolution, but invasion. The peaceful columns of industry marched from ocean to ocean, deploying North and South. The ax rang in the forest, the pick was heard in the foothills, the plow furrowed the plains, and the hum of the spindle and the throb of the forge were heard where the coyote had his den and the savage his wigwam. From this unprecedented impulse of enterprise the United States has reached its eminence in trade and commerce. Nor is it to be forgotten that in foreign markets it has yet its greatest future to make and its wider circle of trade to complete. The nation must overlap its old lines to escape stagnation, and in its exports we have the escape from this disaster. We cannot live behind a wall. We must also interchange commodities or rot in our own straw. The blood of trade must circulate or its heart will cease to beat. We have to be buyers as well as sellers, not in a reckless, go-as-you-please fashion, but with the practical wisdom that in protecting our own rights is not blind to those of others. As we produce in many lines what we once had to import, these importations must necessarily decrease, but there will always be enough of variation in kind and quality to keep the pendulum swinging. As showing our purchases of foreign products the chart of the Treasury is interesting. In 1801 we were over the \$100,000,000 line. In 1854 the figures were \$300,000,000, and in 1873 \$650,000,000. In 1893 the tally was \$865,000,000, and in 1895 \$730,000,000.

In these totals both of exports and imports we have a forceful presentation of the commercial greatness of the United States.

Economy of Good Engineering.

AT a recent meeting of the Engineers' Club of Philadelphia a synopsis of some recent engineering achievements in the Great Lake region was given by John Birkinbine. Among other examples pertinent to the subject we note those referring to the mining of iron ore. The shovel system of mining on the Mesaba Range, radically changing the cost and labor of production, is a noteworthy adaptation of appliances to environments. In dock facilities for shipping ore time and labor have been wonderfully economized. In some instances, by means of pockets and adjustable spouts, 2,500 tons of iron ore are loaded in a freight boat within 45 minutes. Ore has been unloaded for less than a cent per ton. In the canal system, with its locks and grades, the transportation of ore and other freight is prompt and economical. As showing the advantages of this system and its importance in the distribution of products, the shipments through the St. Mary ship canal are estimated at about 17,000,000 tons in 1895. In other related matters the same striking features of improvement in appliances and methods are strongly presented. In all and each of these we have evidences of the incessant and progressive work being done by the engineer in our industrial development. As is in the past so in the future; the same service will be indispensable to the material progress of all nations, and will undertake its several tasks with the same assurance of success.

Moral Character in the Band Saw.

WE believe that one of the chief causes for the better results arising from the use of a band mill is the caution and care taken by the sawyers and other mill hands. The ordinary circular is an incentive to waste. Every sawyer is bound on seeing how much he can cut in ten hours, how quickly he can turn his log, get it off the carriage and have a new one in its place; but with a band there is a disposition, just as marked, to get all out of a log that there is in it. The band saw was invented for that purpose, and the purpose is impressed on all who have anything to do with it. Not that a band saw is a slow tool by any means, for its product in ordinary-sized logs is nearly that of the circular and in large logs is greater, but not so many logs will be put through the mill in the course of a day and the sawyer feels that he is out of the competition for saw-mill record. He has, therefore, a disposition to make a record for good work and for the gain he can make over the log scale. There is moral character in the band mill which is infectious and which constitutes one of its chief advantages.

—An Indiana inventor claims to have perfected a self-acting plow that, properly set, needs no outside controlling or guiding power. The inventor claims that his plow will produce a straight and clean furrow and that it will weigh but a third more than the present average plow.

An American Machine-Tool Store in Paris.

M. FRANCIS FENWICK, of Fenwick Frères & Co., 21 Rue Martel, Paris which firm has for some years acted as the representative in France of the Brown & Sharpe Manufacturing Company, and of the Pratt & Whitney Company, has visited the United States with the engineer of the company, M. Francois Mandon, for the purpose of more fully investigating American machine tools, especially those adapted to bicycle manufacture.

On January 1st the company opened a store at the address given above, in which they will hereafter carry a stock of American machine tools. It is the opinion of these gentlemen, based on considerable study and experience in the matter, that Americans are superior in the lines of work indicated, and that eventually French manufacturers must adopt American systems of manufacture; and that in order to do so they must obtain from this country at least the number of machine tools required to commence the work with the degree of accuracy required, as no such machinery is produced in their own country.

Both the gentlemen named seem better acquainted with American machine shops than some Americans are, and American machine tool builders have in them valuable and appreciative friends.

Practical Utility of Wind Engines.

THERE seems to be no question as to the practical utility of the new though crude "wind engine," which is now coming into use in some parts of the West. According to the description, it resembles the paddle wheel of a stern-wheel boat, with a shaft 12 to 14 feet long, 12 to 16 feet across, with 6 or 8 arms; the lower half of the wheel is shielded from the wind, so that the air acts only upon the upper vanes. A crank upon one end of the shaft connects with the pump. Power can be indefinitely increased at any time by simply increasing the length. The wind acts upon this sort of paddle wheel from all points of the compass except two, and it seems to require no "governor," but simply pumps more during a storm. No tower is provided for, and it is placed so that the radial arms will be clear of the ground. One of these wheels now running in Kansas is stated to be 21 feet in diameter, 27 feet long, and has 8 fans. The largest water wheel in the world is said to be an overshot wheel in the Isle of Man. It is 72½ feet in diameter, 6 feet in breadth, with a crank stroke of 10 feet, and gives 200-horse power.

Fish-Glue, Bicycles and Office Furniture in Switzerland.

SWITZERLAND, especially the wood-working section, offers a great market for American fish-glue, is the information sent to the State Department by B. H. Ridgely, United States Consul at Geneva. Already the article has had great success, completely ousting the material formerly used.

Mr. Ridgely has great hopes for American bicycles in Switzerland. Until recently Swiss dealers would not handle wheels from this country, believing them too light and fragile. They changed their minds when shown one manufactured by a Western firm, and the most extensive dealers have accepted the agency for Switzerland and given a cash order for a number of the machines. In Mr. Ridgely's report to the Department he suggests that American office furniture would sell well in Switzerland.

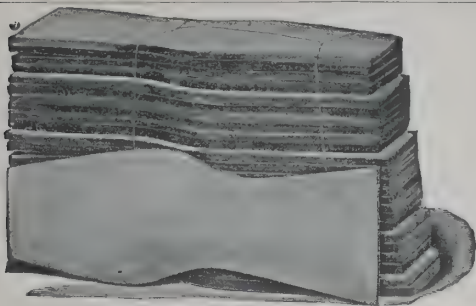
A 103-Mile Trolley Line for Indiana, U. S. A.

AN electric line 103 miles in length is projected through northern Indiana, starting at Celina, Ohio. It is planned to build northwestwardly through Geneva, Montpelier, Warren, L'ncolnville, Wabash, Rome to Rochester. It is the intention of the builders, a wealthy syndicate, to handle both freight and passengers at extremely low rates, and the line will be laid with 70-pound steel and finely equipped. Charles Everett, of Fort Wayne, representing the syndicate, last night met a large number of Wabash business men, and said that a subsidy of \$70,000 would be asked from this county. The capitalists will put a million and a half in the property, and it is hoped to have the road in operation in one year.

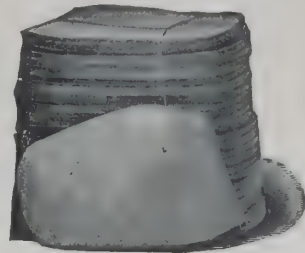
American Ribbon for England.

A VERY promising sign of the times, and especially encouraging to American manufacturers, is the fact that one of the largest wholesale ribbon manufacturers here is seriously considering the advisability of exporting a "warp print" ribbon for the London market, which is at present in great demand, and has heretofore been made exclusively in France. While the "stamping" is done by hand in France, a huge machine has been invented here to do the work which "turns out" as much ribbon in one day as the handworkers take a month to complete. Such a thing as competing with France for the English ribbon trade appeared only a very short time ago nothing short of Quixotic.

—The altering trend of commerce is notably delineated in the record of the iron and steel export operations of the United States for the past two years. This shows an increase for last year over its predecessor of some five millions. Machinery gained \$1,700,000 over 1894, agricultural implements nearly \$500,000, carriages and street cars about \$125,000, and steam cars about \$500,000. In analyzing the showing it is not difficult to trace the organized movement on the part of our manufacturers, who have united to secure better facilities for selling and shipping to the outside world.

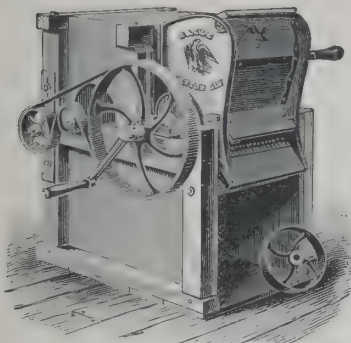


Shoemakers and Shoe Repairers save Money, Labor, Waste and Time when they use Cut Sole Leather (Soles, Half Soles, Heel Lifts, etc.) Prices and full particulars will be furnished on application.



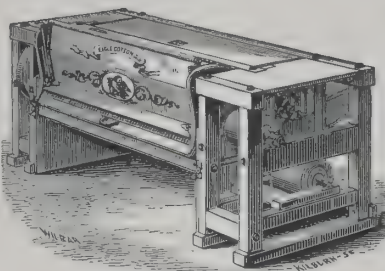
BAXTER, SCHENKELBERGER & CO.
BOSTON, U. S. A. LONDON, ENGLAND.

EAGLE COTTON GINS.

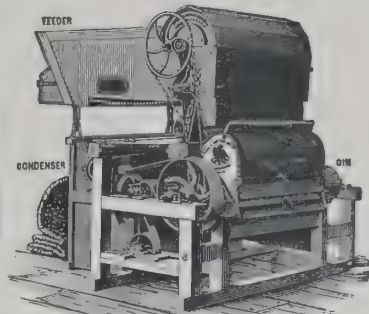


These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details, illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



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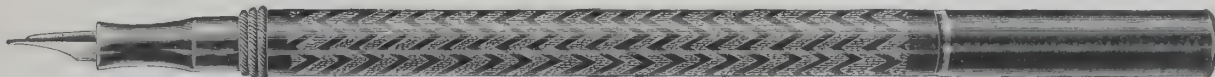
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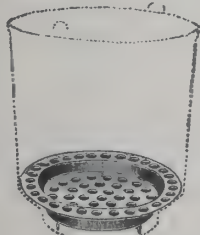
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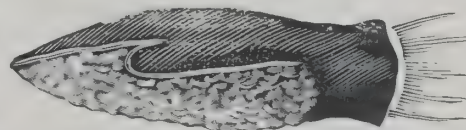
Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.



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FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands.



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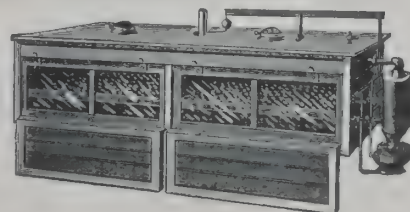
This machine has been exhibited in competition at all the leading shows in the U. S. Never in a single instance has it been defeated.

It is a perfect self-regulator and is supplied with an automatic egg turner making it so simple that even the most inexperienced can manage it without difficulty. It will run perfectly in all climates.

Sold through all export houses in Boston, New York and Philadelphia.

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WOOD & PAIGE, - Lynn, Mass., U. S. A.



The American Piano in England.

ONE of the big men in America's music trade who has given thought to the subject of American pianos in England and on the Continent is H. D. Cable, president of the Chicago Cottage Organ Company. His views on the topic will have the vital interest that always accompanies individual and thorough knowledge on any matter of general import. Mr. Cable is never a surface thinker, and his ideas on the theme will be certain to awaken a lively discussion. The *Indicator* man talked with him on the question, and drew out some expression on a trade movement that some day will occupy the attention of the American manufacturer more than it does now. While disclaiming to be an authority on the topic, because he has not given it all the study that it merits—which is Mr. Cable's modest way of avoiding *ex cathedra* talk—he says that, in his opinion, the American piano manufacturer will eventually enter the foreign field and will make rapid progress there. The first stroke will be tried in England because the ports are free, and when Mr. Cable refers to England he includes the English colonies as well.

"Why cannot the American piano, as it is to-day, be a competitor for this foreign trade?" queried the *Indicator* man.

"Because we are not making the piano suitable for the foreign trade," answered Mr. Cable. "The American people are very different from the English people. Our tastes and our requirements are so different that a piano made for home consumption would not do for the European trade. The foreigner wants a piano different in tone and in construction. For instance, a Frenchman would not be satisfied with a piano that did not have a light tone. The Englishman has his likes also. They would not look on the American instrument in the right light. They would have to be educated up to our standard. That would take time and money; and it would be folly to attempt this when, by manufacturing a special piano, their tastes could be gratified at once, and the market be ready for our coming. The American factory is so much better equipped with machinery, and is so much better organized, that we can produce a better instrument at a less cost. When we reach that point where the English appreciate our product we shall have easy progress. The strongest logic is the logic of analogy; that is generally admitted. How many things do we now furnish the English people? We sell them their organs, and the American watches and clocks are sold in large quantities in Great Britain; and that, too, in spite of the low labor over there. The American factories are organized on such a broad basis, and machinery is so largely used and is so perfect here, that we can produce with our higher priced labor an article at a less cost than they can produce it. If we can compete with the English manufacturer in other articles of commerce, why cannot we compete with him in pianos? Machine work enters so largely into the manufacture of musical instruments that it will enable us to compete with the advantages on our side. The case-work is always an important part of the expense in the making of pianos and organs; and hand labor being more largely used in England than in America, you will understand why we can secure advantages that the English pianomakers cannot secure. And so with the action. Our superior mechanical facilities give us an immediate advantage."

"Where would be the cheapening?"

"In the cost of lumber and our superior machine work against English hand labor. Then we turn out large quantities of instruments, which enable us to reduce the cost of production to the minimum. These facilities naturally reduce the expense of production. They apply equally as well to pianos as to organs, watches, clocks and other articles. Take the English manufacturers as a whole, and they cannot come up to our standard in this respect. We would have to produce a good musical instrument for a special trade. We would have to make just what the people call for. But I perhaps ought to admit that, as a musical instrument, this special piano would be below the standard of the American piano, because, as I have already said, the English people would not appreciate the American piano as it is to-day, and would not pay the price asked for it. But this special piano would be fully equal, and in some respects superior, to the English piano of the same grade."

"Why is it that the American requires a better piano than the Englishman?"

"Why do we dress better? It is because the American wants the best of everything. The Englishman, especially the middle classes of the English, are easier satisfied than the American. Granted that this is a trait that ought to be cultivated by the American people, yet the fact remains incontroverted. The Englishman is a closer buyer. He does not want to buy an article that costs him dear when a cheaper one will serve his purpose as well. He does not spend his money so freely. The American wants the best cigars, the best clothes, the best of everything. The same trait is reflected in the piano trade. The American manufacturer who enters the English field must, therefore, reproduce the English piano in order to successfully compete with the English maker. It will not pay to educate them up to our plane. And we could reproduce that piano and lay it down in London at a less cost than the English manufacturer can make it, simply because we have better machinery and a finer organization of forces in our factories."

"If a piano were made here for the English trade similar to the English piano, what do you think would be the result?"

"Why, we should get a trade, and a big trade, in Great Britain and the colonies. The result would be the same as with the American organ. The entire trade know what a heavy business the American manufacturers do with their organs across the ocean. I believe that eventually the American would drive out the English maker of the lower grade piano. We have driven out the English organmaker, and why not the maker of the lower grades of English

pianos? It is only necessary for some bright American manufacturer to take hold of the project in order to get a large trade. If the English public can buy a specially made, good piano, substantial in construction, for a less price than is asked for the English instrument, they will certainly buy it. Where does the English manufacturer get his woods, veneers, etc.? Why, from America."

"And how about the trade on the Continent, Mr. Cable?"

"We should have more opposition to overcome there on account of the duties. But I think that we will eventually secure a foothold there and find a large market. A special American piano would have to be made for Germany that would be superior to the lower grade German pianos. The same conditions are to be found in Germany as in England. The lack of machinery and the greater organization in our factories would give us immense advantages. We should have to cater especially to the French, because their tastes in the piano line are so different from those of other nations."

"And how long do you think it will be before this consummation is reached?"

"I think that we shall see all this accomplished in a few years, after some one starts the movement. The manufacturers of Boston and New York will have a great advantage over the Chicago manufacturers, because they are so much nearer the field of operations. And I can say to you that I look to see some of the Eastern manufacturers take this same step in a very little while."—From "*Musical Opinion*," London.

The Bicycle Industry.

THE popularity of the cycle has been so marked that its manufacture is rapidly becoming an enormous industry. What it already represents of invested capital and well-paid labor is simply immense. In this country and in others the same fact is everywhere in evidence. It is no doubt true that older industries have in some cases suffered, but there is no evading the fact that others have been greatly benefited, and that in this new form of enterprise and industry, the labor, skill and business opportunities of the age have been greatly increased. As illustrating the magnitude of investment in this industry it is estimated that at a recent cycle show the various companies exhibiting wheels represented a capital of \$90,000,000. In speaking of this a manufacturer is quoted as saying:

"The outside public has probably only a faint idea of the enormous capital necessary to carry on such an enterprise. One hears of almost unknown firms that intend to turn out, say, 50,000 or 100,000 bicycles in a year. It takes a tremendous plant to turn out a small part of that number. Now, a firm that intended to put from 1,500 to 2,000 bicycles on the market of standard excellence would have to make a permanent investment of at least \$200,000 in machinery and factory, and before they get through with the matter they would find that a capital of \$400,000 or \$500,000 would be needed."

With the enterprise being shown in popularizing this method of locomotion in state and city exhibits of fairs, improvements in style and artistic embellishment, and the flow of demand that always follows every new direction of popular taste, the continued development of the new industry is practically assured. As the cycle becomes more closely identified with the interests and habits of the people, and has its representation in the amusements, recreations and festivals of the general public, as well as in its practical business, it will mark out for itself a wider circle of demand.

As a factor in foreign trade it is likely to make a good showing. American manufacturers have already established agencies in England, France, Italy and South America, and various types of the American wheel are rapidly finding favor in these and other countries. We bespeak for this industry both at home and abroad a prosperous future, the limit of which is not in sight.

—The largest orchard of pecan trees in the world is near Brownwood, Tex. The orchard contains 400 acres and its product is sent to all parts of the world.

—Boston manufacturers have found a remunerative field for shoes in France and are positive that the market can be cultivated far beyond its present yield.

—Some time ago an American launch company sold to the Grand Duke Alexander of Russia an electric launch of the same type as that provided for the United States man-of-war New York. The Czar of Russia has seen the boat, and, being greatly pleased with it, has commissioned the Russian Embassy at Washington to buy for him another like it at a cost of about \$4,000.

—The Comstock Manufacturing Company, Utica, N. Y., U. S. A., recently made a shipment of their "Empire" beds to Jerusalem, Syria. These beds are intended for hospital service. In giving the order the importers say, "After comparing your iron 'Empire' bed with others of similar design we are pleased to send you our order, for we are fully satisfied it is superior to any other make."

—"A Cincinnati clothing manufacturer has invented an electrical machine for cutting cloth which is capable of cutting 200 to 250 suits a day," says *Electricity*. "A man can cut only about 25 suits, and then only about four thicknesses of cloth, while the machine easily cuts eight layers. The machine is handsomely constructed and very light, weighing only 30 pounds, and is but 14 inches high. The base is made of bronze, and the armature is supported by a forged steel standard. The knife which does the cutting is about four inches in diameter, and revolves with the rapidity of a buzz-saw. The knife is protected with a guard. The machine is self-oiling, self-sharpening and self-lighting. It has a strength of one-eighth horse-power, and is of 110 voltage. It is operated by a handle in the rear, and glides as easily as a flatiron."



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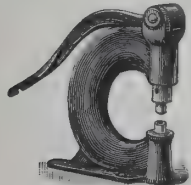
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SECTIONAL VIEW



Showing Rivet divided in the centre after being set.



HAND SET

PLAN OF CLINCH



Showing the full size of the No. 3 Harness Rivet.

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HAVE BEEN TESTED BY YEARS OF SERVICE IN THE UNITED STATES AND HAVE BEEN FOUND TO BE

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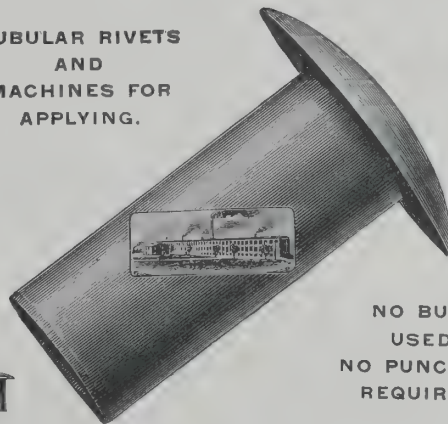
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WHO HAVE OCCASION TO MAKE A HARNESS OR MEND A BROKEN STRAP WILL FIND THEM INVALUABLE.

THESE RIVETS CUT THEIR OWN WAY THROUGH THE MATERIAL AND ARE TURNED ON THE UNDER-SIDE AT ONE OPERATION, MAKING THE WORK AS SECURE AS IF FASTENED WITH SOLID RIVETS.

Machines of superior style and finish to meet every requirement.



No. 3 Set.

THE FALLS RIVET AND MACHINE COMPANY,

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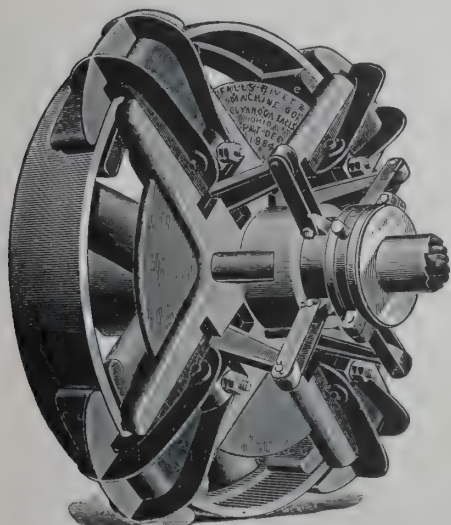
PULLEYS, SHAFTING, COUPLINGS,
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PULLEYS, FRICTION CLUTCH
COUPLINGS, Etc.,

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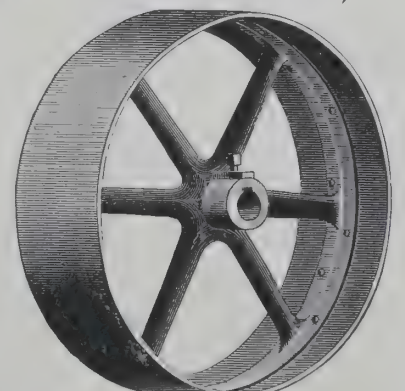
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Friction Clutch Cut-off Coupling.

PATENT
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Waterous Engine Works.

THE WATEROUS ENGINE WORKS CO. (Ltd.), established a manufacturing plant at Brantford, Ontario, Canada, in 1844 and carried on its business from the premises first occupied for 52 years. The works began on a very small scale and gradually increased until a floor space nearly as large as that of its new works was occupied. Many of the adjacent buildings absorbed by it were not originally designed for manufacturing purposes, and the land grown upon had to be acquired piece by piece as it came into the market. Necessarily, this rendered the old works very inconvenient, and latterly, entirely inadequate to meet the requirements of the business.

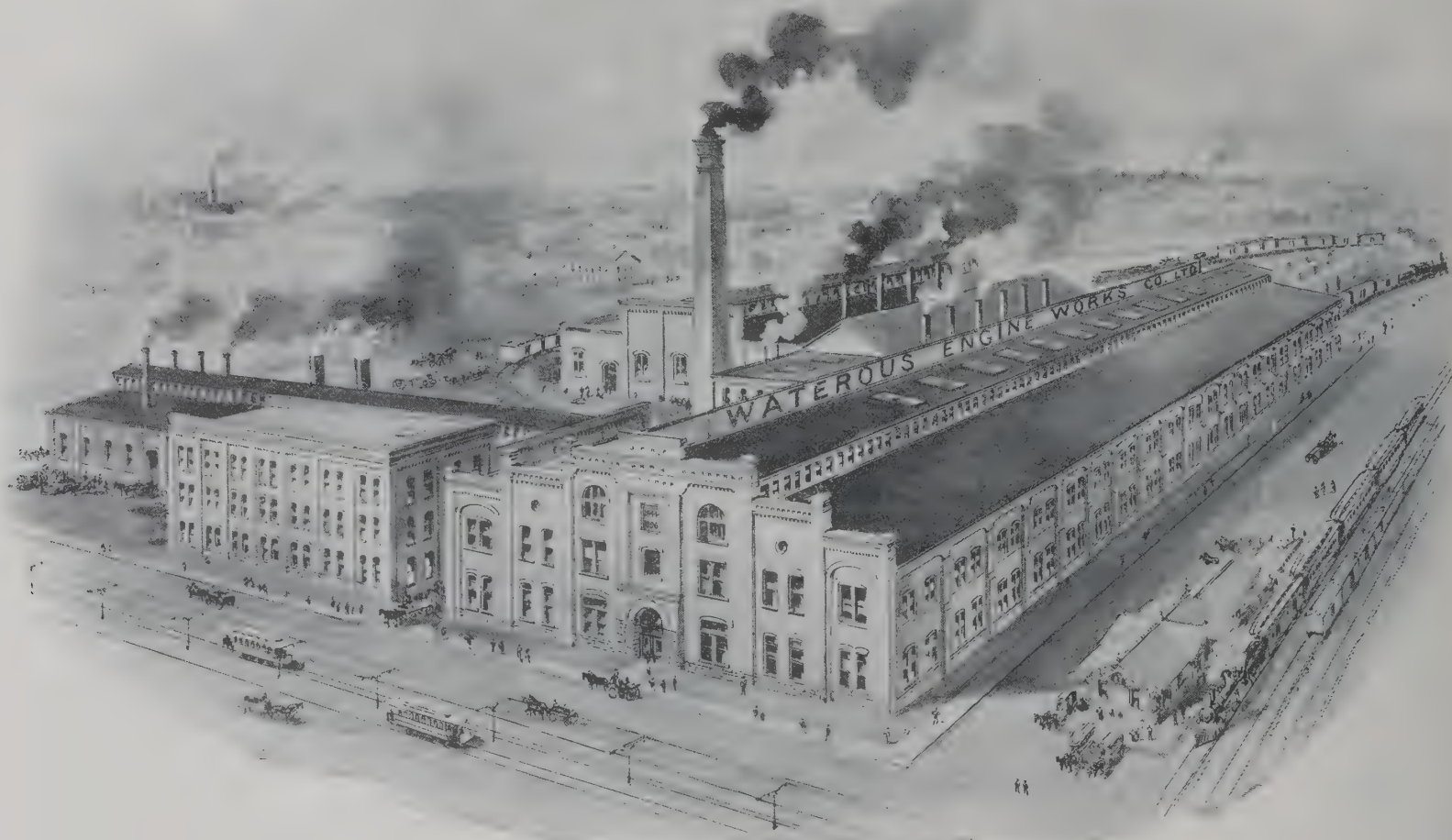
The new works, shown in this illustration, are designed to enable the company to turn out the class of machinery it builds with the least possible expense, for handling both the raw material and the finished products. The buildings

Large Orders from South Africa.

THE WATEROUS ENGINE WORKS COMPANY, of Brantford, Canada, received a cable on March 11th from London, ordering for South Africa one of their largest portable sawmills, including a 70-horse-power engine with locomotive boiler, No. 4, heaviest saw frame with top saw attachment taking a 72-inch lower and 40-inch upper saw, girder steel carriage to carry logs, 6 feet diameter, 25 feet long, of the heaviest hardwood, carriage actuated by steam feed.

On the same day they sold one of their smallest portable outfits for mule transportations to the mining districts of British Columbia. They have gotten fully started in their new works, and are rushing out a large number of their Allis band mills, and other sawmill equipments.

The La Porte Carriage Company, La Porte, Ind., is preparing a shipment



NEW FACTORY OF THE WATEROUS ENGINE WORKS CO., BRANTFORD, CANADA.

are well lighted from the sides and the roof. There are no dark places. Danger from fire is minimized by extending the walls of the different compartments through the roof, rendering them in this respect nearly fireproof.

Railroad tracks run into the buildings so that the raw material is taken directly from the cars into the storehouse, or place where it is to be worked up, and the finished articles are in turn delivered directly into the cars.

Expecting the business to increase in the future as it has in the past, the shops have been so planned as to admit of their being extended indefinitely, and practically without any disarrangement of the original design.

The company manufactures engines, boilers, sawmill and wood-working machinery, brick machinery, steam fire engines and fire department supplies. It has done an export business for many years, and has shipped its machinery extensively to the southern parts of Europe, Australia, Central and South America, and into the oil-producing regions of India. It is one of the best and widest known manufacturing companies in the Dominion of Canada, and has won its fame honestly, by the honest money's worth it has always given in the machinery it has supplied.

—The combination of Scotch oil traders to sustain rates has been broken and rate cutting has begun. The Standard Oil Company is flooding the market.

—The Department of the Interior of the United States Government at Washington report that they now have in use in the different Bureaus of that Department about 80 "Densmore" typewriting machines and that they are giving entire satisfaction, for the users of them have not made a single complaint.

—The Baldwin Locomotive Works has contracted to build 32 additional locomotives to go to Russia. These engines are duplicates of the 20 ten-wheeled passenger engines lately shipped, but the tenders will have eight wheels instead of six. These engines will burn naphtha. They have three pairs of driving wheels six feet in diameter.

of 87 vehicles for Johannesburg, South Africa. The carriages which go to this far-off land are of a special design and make, being constructed of the very heaviest material. The axles and wheels on the finest jobs are as heavy as those on the drays which are used in this city. The African trade demands this character of vehicles. Three special designs in the lot will cost about \$1,400.

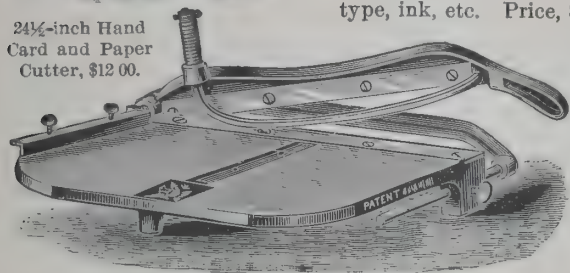
Needles to Be Made in America—Newly Invented Machinery.

A NEEDLE FACTORY, the first in the United States, is soon to be started in Chicago, the needles to be made by a machine, the first of its kind, invented by Eugene Fontaine, of Detroit. Repeated tests have demonstrated its practicability and it will turn out 2,500 needles an hour. They can be sold for 50 cents a thousand as against \$1.20 for English and 75 cents for German needles. The wire is kept on a spindle and is fed into the machine by the constant revolution of the spindle. Immediately upon being reeled into the machine the wire is cut into the lengths desired for the particular needle wanted. The short pieces of wire are then grasped in order by a clutch and the exposed end is brought into contact with a die, which stamps a blank through which the eye is to be made. A second die perforates this blank, and a third die swages off the excess steel about the eyes. The needles then come into contact with a series of clutches, which take them from the first set of machinery, and, turning them end to end, exposes them to emery wheels and range belts.

After the point has been made perfect, the needle is reversed again to another series of clutches and the eye is polished. From the polishing belts the needles drop out into carrying machines at the rate of 40 a minute. Up to this time the capacity of the machine has been but 38 a minute, but in time it is thought that the output will greatly exceed that number.



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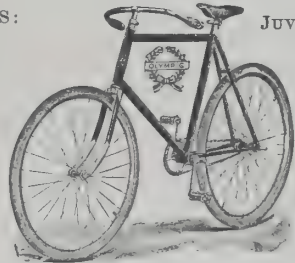
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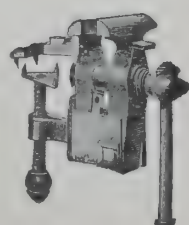
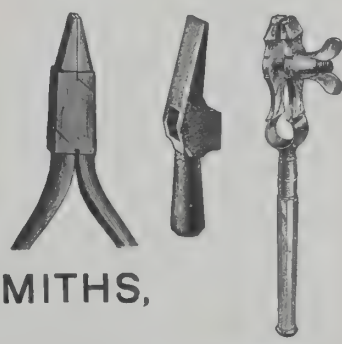
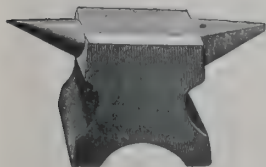
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An Export Review.

THE exports of merchandise in 1895 were \$807,740,016, of which \$545,714,375 were of agricultural and \$201,152,771 of manufactured products. The largest volume of merchandise exports on record was for the calendar year 1891, or the fiscal year ending June 30, 1892, when they were \$1,015,732,011. It will be interesting to note the rise of exports of domestic merchandise during recent years. In 1860 they were \$316,242,423; in 1870, \$455,208,341; in 1880, \$823,946,353 for the fiscal year. From 1885 to the close of 1895 they were, for the period named, as follows:

	Fiscal Year.	Calendar Year.
1885.....	\$726,682,946	\$673,593,506
1886.....	665,964,529	699,519,430
1887.....	703,022,923	703,319,692
1888.....	683,862,104	679,597,477
1889.....	730,282,609	814,154,864
1890.....	845,293,828	845,999,603
1891.....	872,270,283	957,333,551
1892.....	1,015,732,011	923,237,315
1893.....	831,030,785	854,729,454
1894.....	869,204,937	807,312,116
1895.....	793,392,599	807,740,016
Total.....	\$8,736,739,554	\$8,766,537,024
Average per year.....	794,249,050	796,957,911

The increase in imports of manufactured articles in 1895 over 1894 was \$59,635,001, for articles ready for consumption, such as silk and woollen fabrics. Taking all manufactured articles, the increase was \$92,612,090.

The exports of manufactures are now larger than ever before. In 1885 they were \$147,187,527, then fell off to \$130,319,286, rose to \$168,927,315 in 1891, since which time they have been as follows:

Fiscal Year.	
1892.....	\$158,510,037
1893.....	158,023,118
1894.....	183,718,484
1895.....	183,595,743

Domestic exports for the year ending December 31, 1895, were divided as follows:

Products of		Per cent.
Agriculture.....	\$545,714,375	67.56
Manufactures.....	201,152,771	24.90
Mining.....	19,820,505	2.45
Forest.....	30,662,098	3.80
Fisheries.....	6,232,224	.77
Miscellaneous.....	4,158,048	.52
Total.....	\$807,740,016	100.00

The total exports of breadstuffs were valued at \$125,266,871. They include 61,956,638 bushels of corn, 35,062,886 pounds of oatmeal, 66,804,686 bushels and 14,528,761 barrels of flour. Of raw cotton there were 5,579,121 bales, or 2,770,832,486 pounds exported, worth \$189,890,645; to which we add \$10,100,881 of manufactures of cotton cloth and \$3,914,133 in wearing apparel, etc. Iron and steel, all forms, are credited with \$35,071,535; leather and manufactures of, \$18,492,760; mineral oils, all sorts, \$50,842,982; vegetable oils, \$6,909,986, of which \$6,429,828 were cottonseed oil. Of this latter item, 21,763,649 gallons were exported, of which 18,085,514 gallons went to Europe.

The total value of provisions exported was \$132,456,83, divided as follows:

Canned Beef.....	\$5,476,040
Fresh Beef.....	16,522,018
Salted or other cured Beef.....	3,743,667
Tallow.....	1,207,350
Bacon.....	37,411,944
Hams.....	10,996,870
Pork (fresh and pickled).....	4,430,155
Lard.....	37,348,753
Mutton.....	37,222
Oleomargarine.....	7,824,893
Poultry and Game.....	28,418
Other Meat Products.....	1,593,651
Butter.....	2,194,103
Cheese.....	3,401,117
Milk.....	240,642
Total.....	132,456,843

Of tobacco there was exported \$24,707,563 unmanufactured and \$4,162,288 manufactured; of wood and manufactures of wood, \$28,943,154.—*American Grocer.*

—One of England's leading industrial journals admits that American-made mechanics' tools are preferred in Great Britain to those of home make. A correspondent in commenting upon this fact adds that the better business methods pursued by American manufacturers constitute a formidable element. He claims that the Sheffield houses take from four to eight weeks to fill an order, while a requisition on an American agent in London is honored in as many days.

Test of the Eophone.

A THOROUGH test of the merits of the eophone, a contrivance for determining the exact direction from which sound is coming at sea in a fog, was made several days ago on board the Government tug Daniel S. Lamont by the inventor, Frank Della Torre, of Baltimore, Md., and a party of local seafaring men.

The experiment was under the direction of Mr. Lewis Nixon, the naval designer, and Mr. Robert Neville. It was a complete success. The Lamont circled around the tug Nimrod in the lower bay, keeping about a mile distant from her. The Nimrod blew 10-second blasts on her whistle at intervals and Mr. Della Torre, who was operating the instrument, found the direction without a single failure. On the way back Captain Hanna found the Bay Ridge bell buoy in a heavy snow storm, although the sound was inaudible to those on the deck of the tug. In his report to the National Board of Marine Underwriters he will recommend that the instrument be used on all vessels, both at sea and in inland waters.

The eophone used on the Lamont consists of a large funnel divided in the centre by a diaphragm, which cuts the sound wave. This funnel is mounted on a shaft running down through the pilot-house and carrying an indicator travelling over a dumb compass. Each section of the funnel is connected with the operator's corresponding ear by an ordinary speaking tube. The method of operation is to swing the funnel around until the sound is heard equally by both ears. Then the funnel is pointing directly at the source of the sound, and the indicator inside the deckhouse shows the direction whence the sound comes. If the funnel does not point directly at the source of sound, it is heard by only one ear.

The First Electric Locomotive.

THE Baldwin Locomotive Works have shipped to the Westinghouse Electric Works, Alleghany, Pa., the first electric locomotive ever built for a steam railroad. The Baldwin works made everything about this unique engine but the electric mechanism, which has been supplied by the Westinghouse Company at its shops at East Pittsburg. The new machine was run out of the shop on Wednesday last, and will be tested as soon as a break at the power house is repaired. The locomotive is the size of an ordinary box car, about 30 feet long and mounted upon two four-wheel trucks. Completed, it weighs 60 tons.

It is geared for 800 horse-power, which will pull a loaded freight train 40 miles an hour. By a single change of the gearing this engine can run up to 1,000 horse-power and can pull a train 80 miles an hour. This locomotive is intended for freight. The passenger ones will attain a far higher speed. The wheels are 42 inches in diameter. Only a space eight feet square is needed in the locomotive for the electric motor.

One man will operate the locomotive by means of a controller similar to that on a common trolley car, only much larger and stronger. The locomotive is built to be operated by either overhead or underground trolley wires. It carries no coal, firebox, smokestack or water tank. In front is a powerful electric searchlight for use at night to light the track. The cost of the new electric locomotive is about equal to that of a steam locomotive—\$10,000.

It is reported that President E. H. R. Green, of the Texas Midland, is considering the idea of substituting electric for steam locomotives on the line. His road is about 75 miles long.

Staves to Be Shipped from Savannah to Paris.

ALFRED HIRT, of Greencastle, Ind., one of the oldest and largest manufacturers and exporters of barrel staves in this country, is arranging to make Savannah his shipping port. Heretofore Mr. Hirt has shipped through Baltimore and New Orleans. He has until recently been operating in Arkansas, Tennessee and in Mississippi, but has now begun operating in Georgia and has secured large tracts of land in Wilcox and adjoining counties. He will have a cargo ready to ship about the middle of April.

Mr. Hirt manufactures exclusively hewn white oak staves, and chiefly for brewers' use. His shipments are principally to Rotterdam. Heretofore the stave shipments through Savannah have been as tunnage, and largely by sailing vessels. Mr. Hirt proposes to ship by steamer cargo, bringing his shipments direct from the banks of the Ocmulgee river by the new Savannah and Hawkinsville river route.

Mr. Hirt is known as the manufacturer and shipper of the staves for the great wine cask to be built for the Paris exposition in 1900. The cask will be the largest ever built, being nearly twice the size of the famous Heidelberg tun, which has been for three centuries the father of barrels. It will hold 4,400 barrels, or nearly 140,000 gallons. The staves for this monster cask were hewn from white oak trees in Calhoun County, Miss., over a year ago. Five cars were required to transport the staves. There are 160 of them in all, including the head pieces. The staves vary from eight inches to one foot in thickness, and are now sunk in a canal in France, where they will remain until thoroughly water-seasoned. This process is to prevent the absorption of the wine, with which the cask will be filled, by the wood.

—American goods are as a rule the best in quality and sometimes the cheapest in price.

—The F. Hammar Paint Company, 1220, 1222, 1224 Spruce street, St. Louis, Mo., U. S. A., have devised and are distributing a novelty in the way of a spinning disk, decked with three primary colors, but which in the course of its revolutions shows at least 20 different and beautiful shades—all very pleasing to the eye.

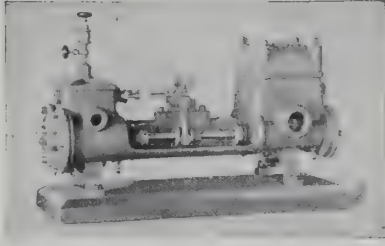
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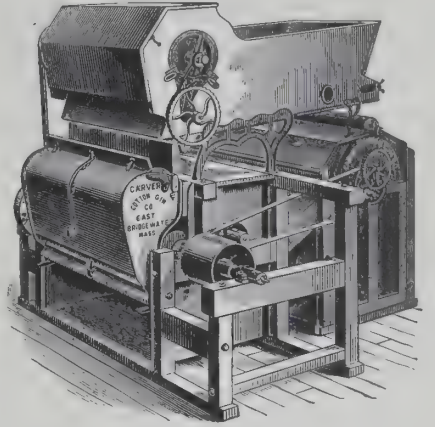
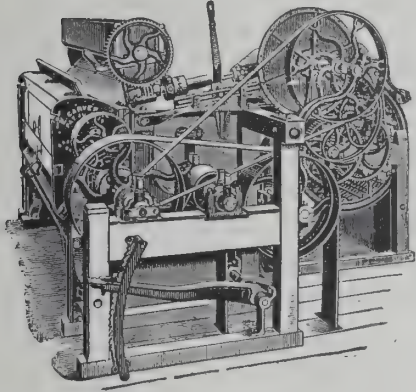
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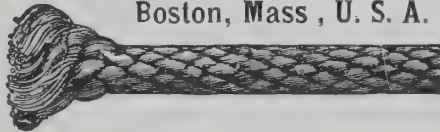


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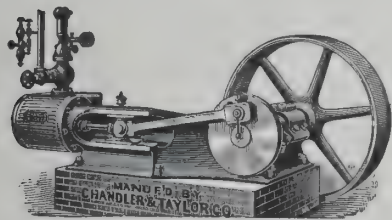
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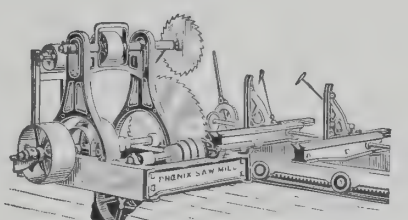
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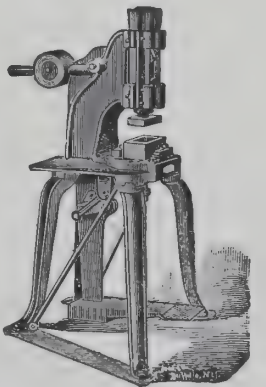
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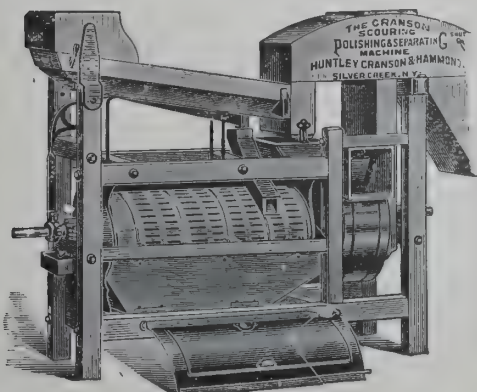
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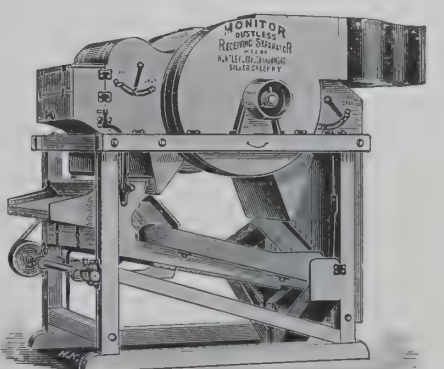
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FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry) ..	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	2 1/4 inches.
Arobe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1.611 pounds.	do.....	Uruguay (double) ..	7.776 bushels.	do.....	China, Japan and Sumatra.	133 1/4 pounds.
Arroba (dry) ..	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	Fanega (liquid)	Spain.....	16 gallons.	do.....	(hemp).	
do.....	Portugal.....	32.38 pounds.	Feddán.....	Egypt.....	1.03 acres.	do.....	Philippine Islands	140 pounds.
do.....	Spain.....	25.36 pounds.	Frail (raisins) ..	Spain.....	50 pounds.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Venezuela.....	25.4024 pounds.	Frasco.....	Argentine Republic	2.5096 quarts.	do.....	Castilian.....	0.91407 foot.
Arroba (liquid).	Cuba, Spain and Venezuela.	4.263 gallons.	do.....	Mexico.....	2.5 quarts.	Pik.....	Turkey.....	27.9 inches.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	Pood.....	Russia.....	36.112 pounds.
Arshine (qu're)	do.....	5.44 square feet.	Garnice.....	Russian Poland ..	0.88 gallon.	Pund (pound) ..	Denmark, Sweden..	1.102 pounds.
Artel.....	Morocco.....	1.12 pounds.	Gram.....	Metric.....	15.432 grains.	Quarter.....	Great Britain.....	8.252 bushels.
Baril.....	Argentine Republic and Mexico.	20.0787 gallons.	Hectolitre:	do.....	2.471 acres.	do.....	London (coal).....	36 bushels.
Barrel.....	Malta (customs) ..	11.4 gallons.	Dry.....	do.....	2.838 bushels.	Quintal.....	Argentine Republic	101.42 pounds.
do.....	Spain (raisins) ..	100 pounds.	Liquid.....	do.....	26.417 gallons.	do.....	Brazil.....	130.06 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Joch.....	Austria-Hungary ..	1.422 acres.	do.....	Castile, Chile, Mex- ico and Peru.	101.61 pounds.
Bongkal.....	India.....	882 grains.	Ken.....	Japan.....	4 yards.	do.....	Greece.....	123.2 pounds.
Bonw.....	Sumatra.....	7,095.5 square metres.	Kilogram (kilo)	Metric.....	2.2046 pounds.	do.....	Newfoundland (fish)	112 pounds.
Bu.....	Japan.....	0.1 inch.	Kilometre.....	do.....	0.621376 mile.	do.....	Paraguay.....	100 pounds.
Butt (wine) ..	Spain.....	140 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Syria.....	125 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Kota.....	Japan.....	5.13 bushels.	do.....	Metric.....	220.46 pounds.
Candy.....	India (Bombay) ..	529 pounds.	Korree.....	Russia.....	3.5 bushels.	Rottle.....	Palestine.....	6 pounds.
do.....	India (Madras) ..	500 pounds.	Last.....	Belgium, Holland..	85.134 bushels.	do.....	Syria.....	5 1/2 pounds.
Cantar.....	Morocco.....	113 pounds.	do.....	England (dry malt) ..	82.52 bushels.	Sagen.....	Russia.....	7 feet.
do.....	Syria (Damascus) ..	575 pounds.	do.....	Germany.....	2 metric tons (4,480 pounds.)	Salm.....	Malta.....	490 pounds.
do.....	Turkey.....	124.7036 pounds.	do.....	Prussia.....	112.29 bushels.	Se.....	Japan.....	3.6 feet.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Russian Poland.....	11 1/2 bushels.	Seer.....	India.....	1 pound 13 ounces.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Spain (salt).....	4.760 pounds.	Shaku.....	Japan.....	10 inches.
Catty.....	China.....	1.333 1/4 (1 1/4) pounds.	League (land) ..	Paraguay.....	4.633 acres.	Sho.....	do.....	1.6 quarts.
do.....	Japan.....	1.31 pounds.	do.....	China.....	2.115 feet.	Standard (St. Petersburg).	Lumber measure...	165 cubic feet.
do.....	Java, Siam, Malacca	1.35 pounds.	Libra (pound) ..	Castilian.....	7.100 grains (troy).	Stone.....	British.....	14 pounds.
do.....	Sumatra.....	2.12 pounds.	do.....	Argentine Republic	1.0127 pounds.	Suerte.....	Uruguay.....	2,700 cuadras (see cua- dra).
Centaro.....	Central America...	4.2631 gallons.	do.....	Central America...	1.043 pounds.	Tael.....	Cochin China.....	590.75 grains (troy).
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Chile.....	1.014 pounds.	Tan.....	Japan.....	0.25 acre.
do.....	Darmstadt.....	110.24 pounds.	do.....	Cuba.....	1.0161 pounds.	To.....	do.....	2 pecks.
do.....	Denmark, Norway ..	110.11 pounds.	do.....	Mexico.....	1.01465 pounds.	Ton.....	Space measure ..	40 cubic feet.
do.....	Nuremberg.....	112.43 pounds.	do.....	Peru.....	1.0143 pounds.	Tonde (cereals)	Denmark.....	3.94783 bushels.
do.....	Prussia.....	113.44 pounds.	do.....	Portugal.....	1.011 pounds.	Tondeland.....	do.....	1.36 acres.
do.....	Sweden.....	93.7 pounds.	do.....	Uruguay.....	1.0143 pounds.	Tsubo.....	Japan.....	6 feet square.
do.....	Vienna.....	123.5 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tsun.....	China.....	1.41 inches.
do.....	Zollverein.....	110.24 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tunna.....	Sweden.....	4.5 bushels.
Chih.....	China.....	220.46 pounds.	do.....	Greece.....	1.1 pounds.	Tunnland.....	do.....	1.22 acres.
Coyan.....	Sarawak.....	14 inches.	do.....	Guiana.....	1.0791 pounds.	Vara.....	Argentine Republic	34.1208 inches.
do.....	Siam (Koyan).....	2,667 pounds.	do.....	England (timber) ..	Squ're, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	do.....	Castile.....	0.914117 yard.
do.....	Argentine Republic	4.2 acres.	Load.....	Costa Rica.....	1 1/2 acres.	do.....	Central America...	38.874 inches.
Cuadra.....	Paraguay.....	78.9 yards.	Manzana.....	Bolivia.....	0.507 pound.	do.....	Chile and Peru.....	33.874 inches.
do.....	Paraguay (square) ..	8,077 square feet.	Marc.....	India.....	82 1/2 pounds.	do.....	Cuba.....	33.384 inches.
do.....	Uruguay.....	Nearly 2 acres.	Maund.....	Metric.....	39.37 inches.	do.....	Caracao.....	33.375 inches.
Cubic metre.....	Metric.....	35.3 cubic feet.	Metre.....	Denmark.....	4.68 miles.	do.....	Mexico.....	33 inches.
Cwt. (hundred- weight) ..	British.....	112 pounds.	Mil.....	Denmark (geograph- ical) ..	4.61 miles.	do.....	Paraguay.....	34 inches.
Dessiatine.....	Russia.....	2,6997 acres.	do.....	Prussia.....	0.63 acre.	Vedro.....	Venezuela.....	33.884 inches.
do.....	Spain.....	1,599 bushels.	Morgen.....	Egypt.....	2,7225 pounds.	Verges.....	Russia.....	2,707 gallons.
Drachme.....	Greece.....	Half ounce.	Oke.....	Greece.....	2.84 pounds.	Vorst.....	Isle of Jersey.....	71.1 square rods.
Dun.....	Japan.....	1 inch.	do.....	Hungary.....	3.0817 pounds.	Vloeka.....	Russian Poland.....	0.663 mile.
Egyptian wts. and measures.	(See CONSULAR RE- PORTS No. 144.)		do.....					41.98 acres.
Fanega (dry) ..	Central America ..	1,5745 bushels.						

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes—ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.338 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.

Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.)
Metre equals 39.37 inches.
Decametre (10 metres) equals 39.37 inches.
Hectometre (100 metres) equals 328 feet 1 inch.
Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10
inches).
Myriametre (10,000 metres) equals 6.2137 miles.

Metric surface measures.

Centare (1 square metre) equals 1,550 square inches.
Are (100 square metres) equals 119.6 square yards.
Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.

Length.	Surface.	Capacity.	Weight.	Notation.
Myriametre.....			Metric ton.....	1,000,000
Kilometre.....			Quintal.....	100,000
Hectometre.....	Hectare.....	Kilolitre.....	Myriagram.....	10,000
Decametre.....	Decare.....	Hectolitre.....	Kilogram.....	1,000
METRE.....	ARE.....	Decalitre.....	Hectogram.....	100
Decimetre.....		LITRE.....	Decagram.....	10
Centimetre.....	Centiare.....	Centilitre.....	GRAM.....	1
Millimetre.....		Millilitre.....	Decigram.....	0.1
			Centigram.....	0.01
			Milligram.....	0.001

EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.

1 kilometre.....	0.62137 mile.	1 mile.....	1.60935 kilometres.
1 metre.....	3.28083 feet.	1 yard.....	0.914402 metre.
1 centimetre.....	0.3937 inch.	1 foot.....	0.304801 metre.
1 hectare.....	2.471 acres.	1 inch.....	25.4001 millimetres.
1 are.....	119.6 square yards.	1 square mile.....	2.59 square kilometres.
1 metric ton.....	2,204.62 pounds.	1 acre.....	0.4047 hectare.
1 kilogram.....	2.20462 pounds.	1 square foot.....	9.29 square decimetres.
1 gram.....	15.43236 grains.	1 pound.....	0.45359 kilogram.
1 hectolitre.....	2.8377 bushels.	1 grain.....	64.7989 milligrams.
1 hectolitre.....	26.417 gallons.	1 bushel.....	0.35239 hectolitre.
1 litre.....	1.0567 quarts.	1 gallon.....	3.78543 litres.
1 stere.....	1.308 cubic yards.	1 cubic foot.....	0.02832 cubic metre.

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.	Square centimetres $\times 6.451$ = sq. inches.	Litres $\times 28.316$ = cubic feet.	Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Millimetres $\times 25.4$ = inches.	Square metres $\times 10.764$ = sq. feet.	Hectolitres $\times 3.531$ = cubic feet.	Kilogram-metres $\times 7.233$ = foot lbs.
Centimetres $\times 0.3937$ = inches.	Square kilometres $\times 247.1$ = acres.	Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)	Kilo per metre $\times 0.672$ = lbs. per foot.
Centimetres $\times 2.54$ = inches.	Hectare $\times 2.471$ = acres.	Hectolitres $\times 0.131$ = cubic yards.	Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Metres $\times 39.37$ = inches. (Act Congress.)	Cubic centimetres $\times 16.383$ = cubic inches.	Hectolitres $\times 26.42$ = gallons (231 cu. in.)	Kilo per cheval $\times 2.235$ = lbs. per H. P.
Metres $\times 3.281$ = feet.	Cubic metres $\times 3.69$ = fl. drams	Grams $\times 15.432$ = grains. (Act Congress.)	Kilowatts $\times 1.34$ = horse-power.
Metres $\times 1.094$ = yards.	Cubic centimetres $\times 29.57$ = fluid oz. (U. S. P.)	Grams $\times 981$ = dynes.	Watts $\times 746$ = horse-power.
Kilometres $\times 0.621$ = miles.	Cubic metres $\times 35.315$ = cubic feet.	Grams (water) $\times 29.57$ = fluid ounces.	Watts $\times 0.7373$ = foot pounds per second.
Kilometres $\times 1.6093$ = miles.	Cubic metres $\times 1.308$ = cubic yards.	Grams $\times 23.35$ = ounces avoirdupois.	Calorie $\times 3.968$ = B. T. U.
Kilometres $\times 3,280.7$ = feet.	Cubic metres $\times 264.2$ = gallons (231 cu. in.)	Grams per cu. cent. $\times 27.7$ = lbs. per cu. in.	Cheval vapeur $\times 0.9863$ = horse-power.
Square millimetres $\times 0.0155$ = sq. inches.	Litres $\times 61.022$ = cubic in. (Act Congress.)	Joule $\times 0.7373$ = foot pounds.	(Centigrade $\times 1.8$) $\div 32$ = degree Fahrenheit.
Square millimetres $\times 645.16$ = sq. inches.	Litres $\times 33.84$ = fluid ounces (U. S. Phar.)	Kilograms $\times 2.2046$ = pounds.	Franc $\times 0.193$ = dollars.
Square centimetres $\times 0.155$ = sq. inches.	Litres $\times 0.2642$ = gallons (231 cu. in.)	Kilograms $\times 35.3$ = ounces avoirdupois.	Gravity Paris = 980.94 centimetres per sec.
	Litres $\times 3.78$ = gallons (231 cu. in.)	Kilograms $\times 1,102.3$ = tons (2,000 lbs.)	

General Offices, 74 Cortlandt Street, New York.

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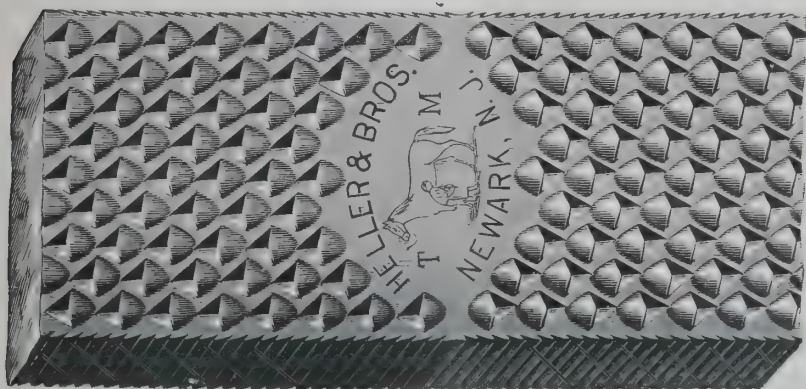
MANUFACTURERS OF

A diamond-shaped logo for 'BARNETT'S'. Inside the diamond is a long, thin, textured object, possibly a needle or pin, oriented horizontally. The handle of the object is on the right and features the brand name 'BARNETT'S' in a stylized font. Above the top vertex of the diamond, the words 'TRADE' and 'MARK.' are written in a serif font, separated by a small gap.

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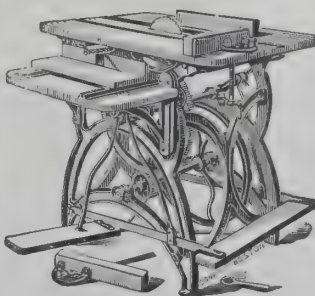
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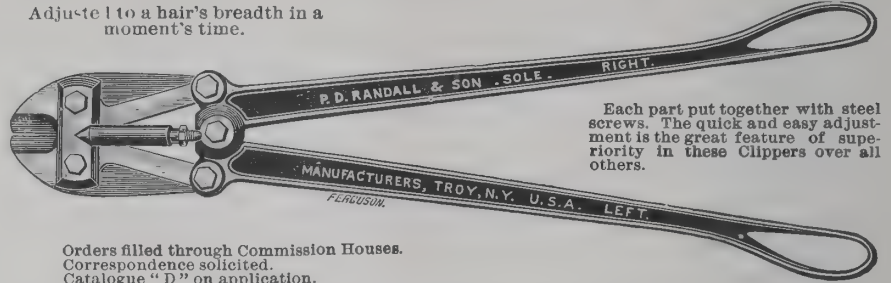
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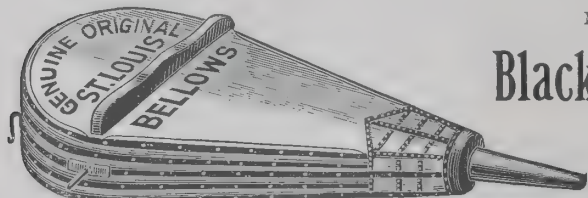
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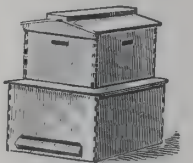
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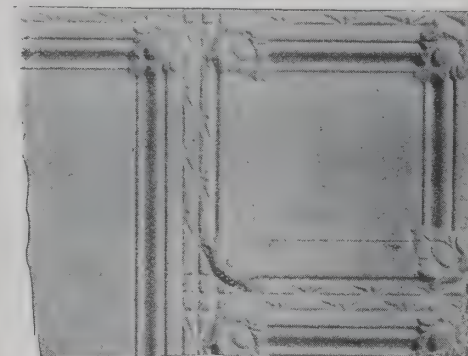
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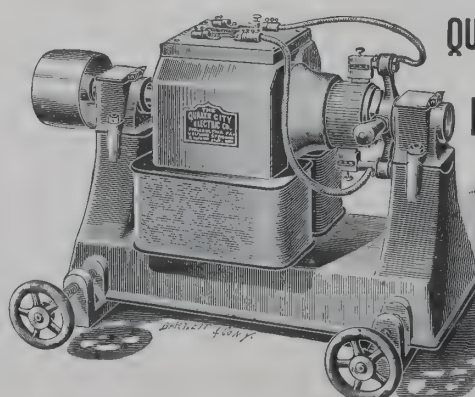
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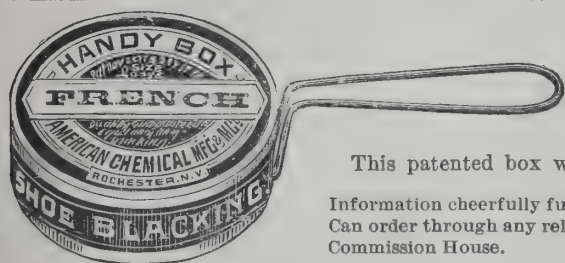
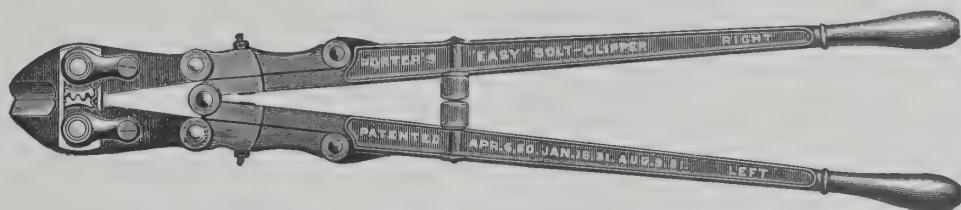
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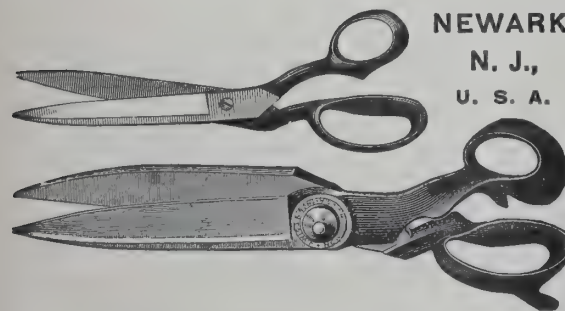
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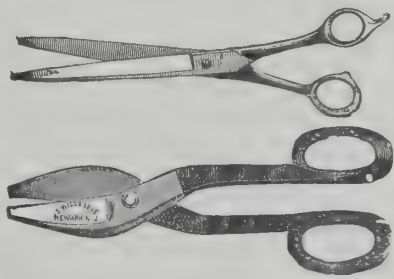
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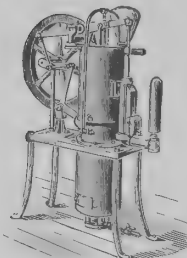
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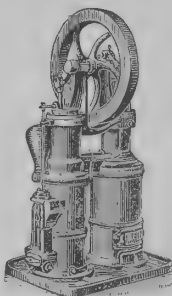
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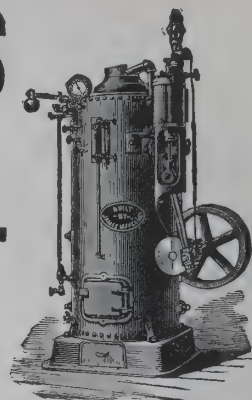
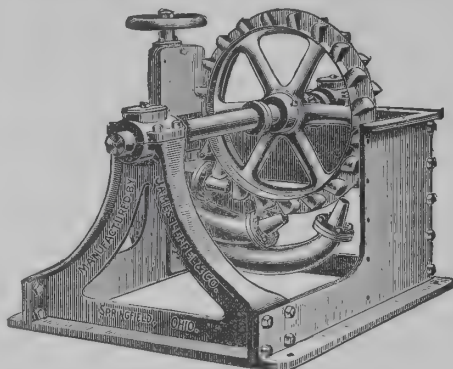
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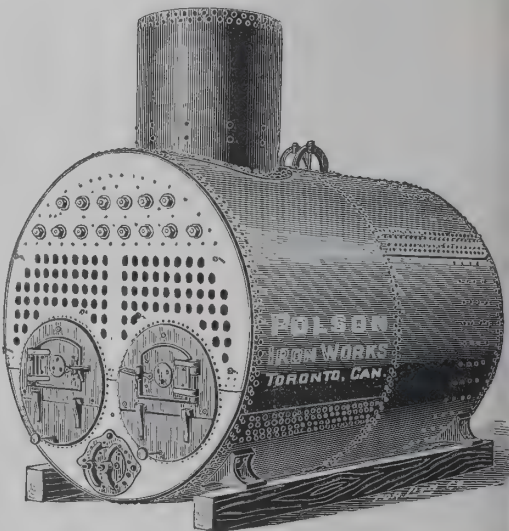
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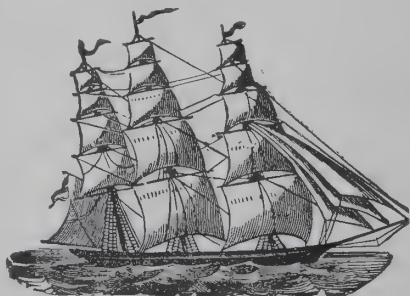


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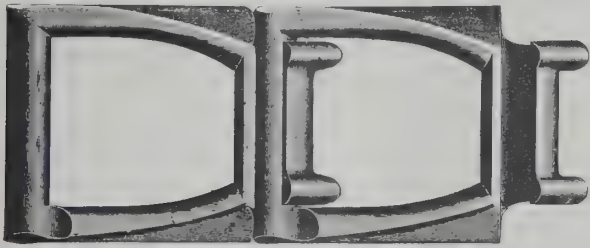
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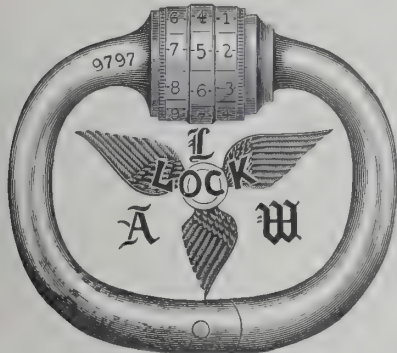
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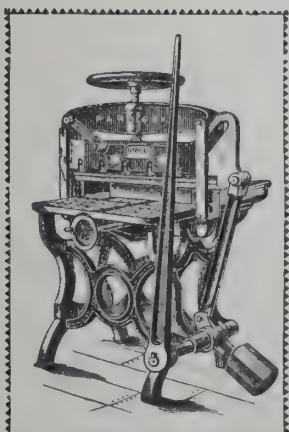
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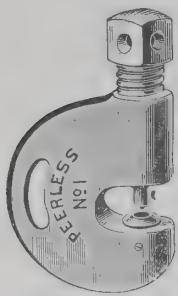
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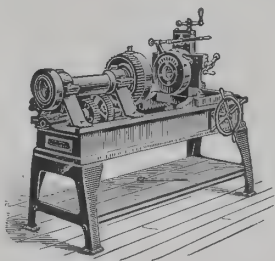
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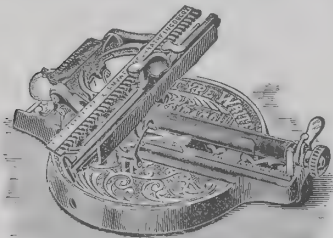


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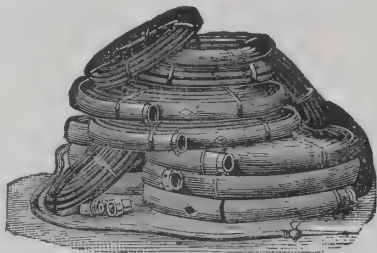
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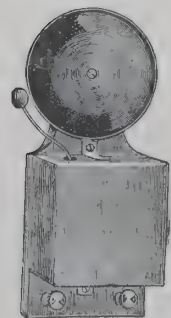
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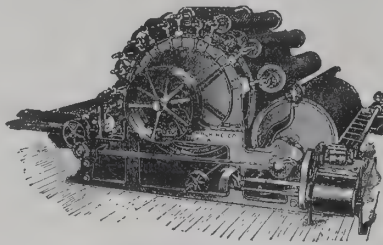
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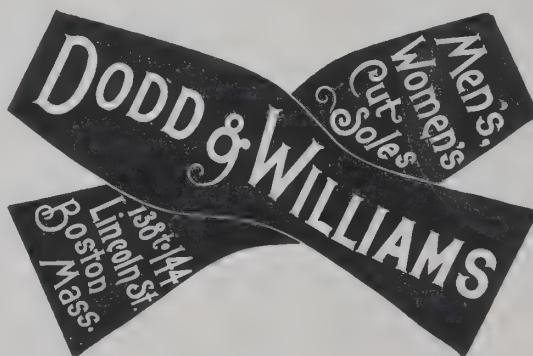
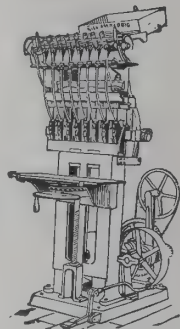
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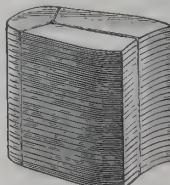
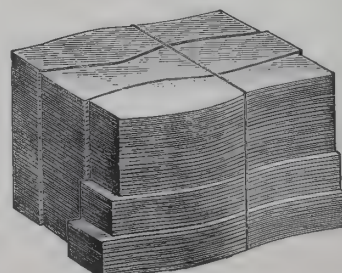
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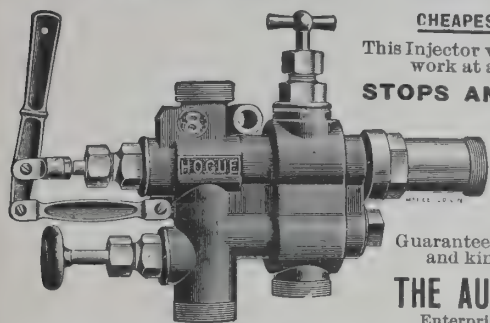


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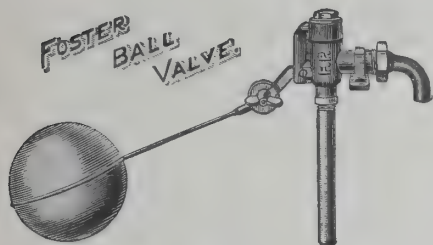
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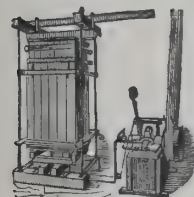
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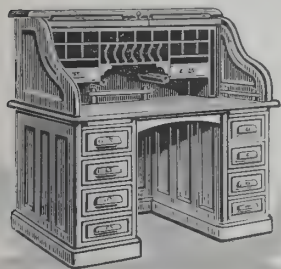
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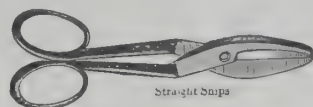
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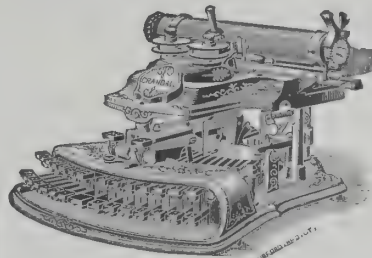
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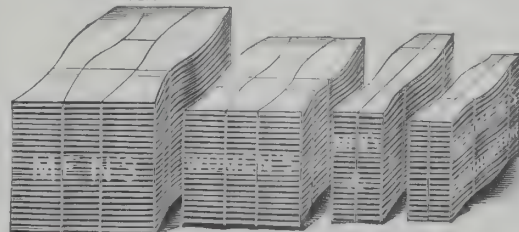
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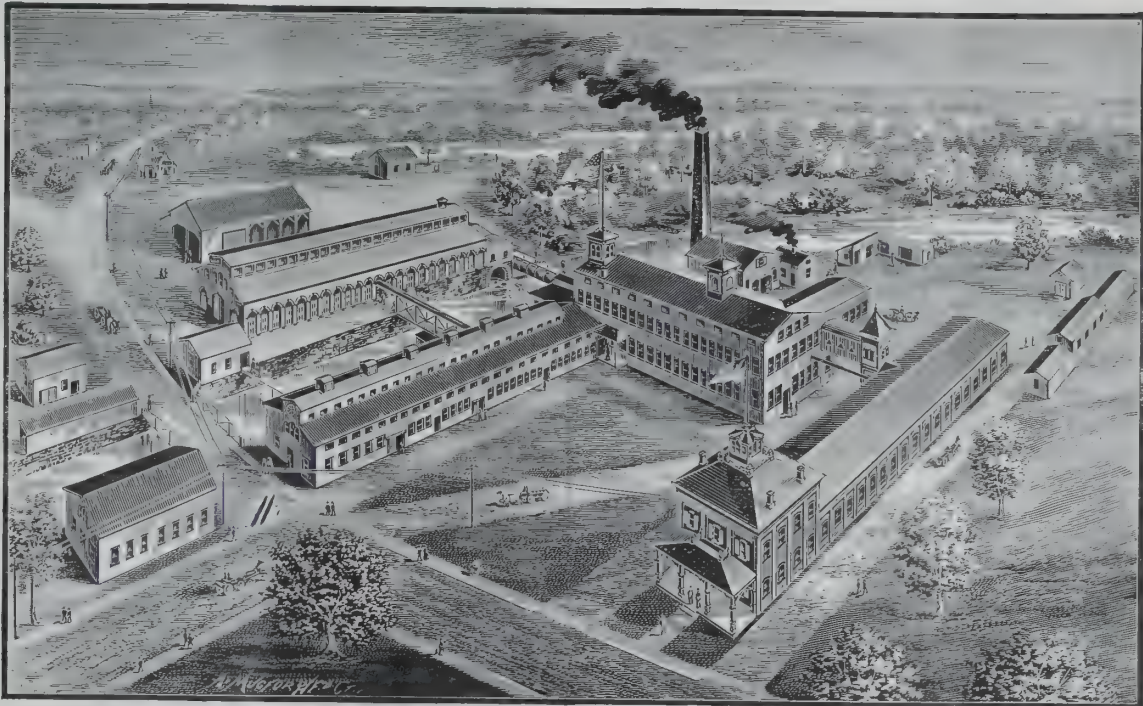
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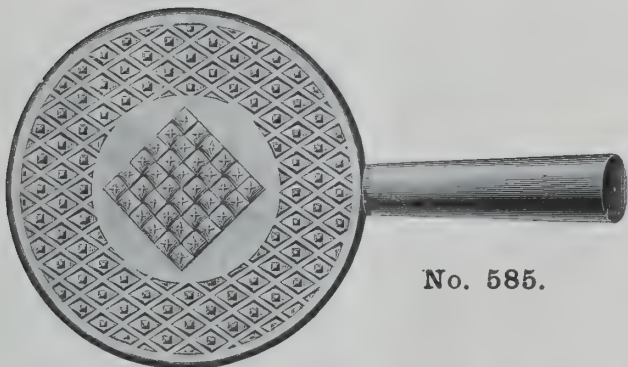
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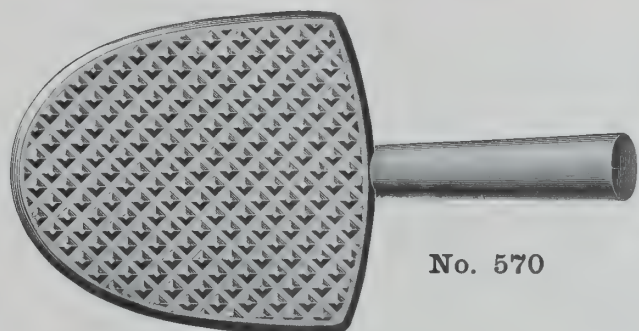
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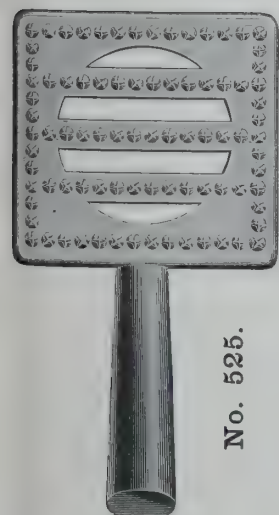
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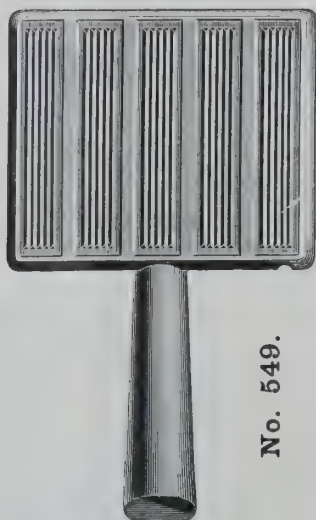
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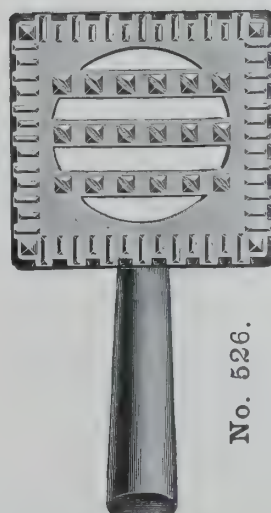
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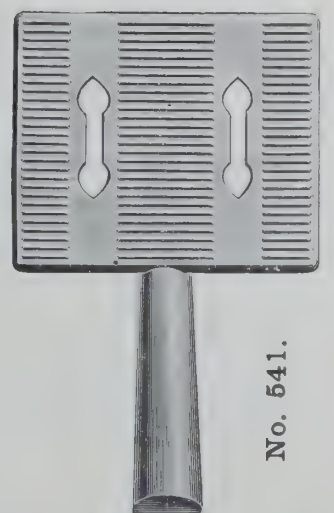
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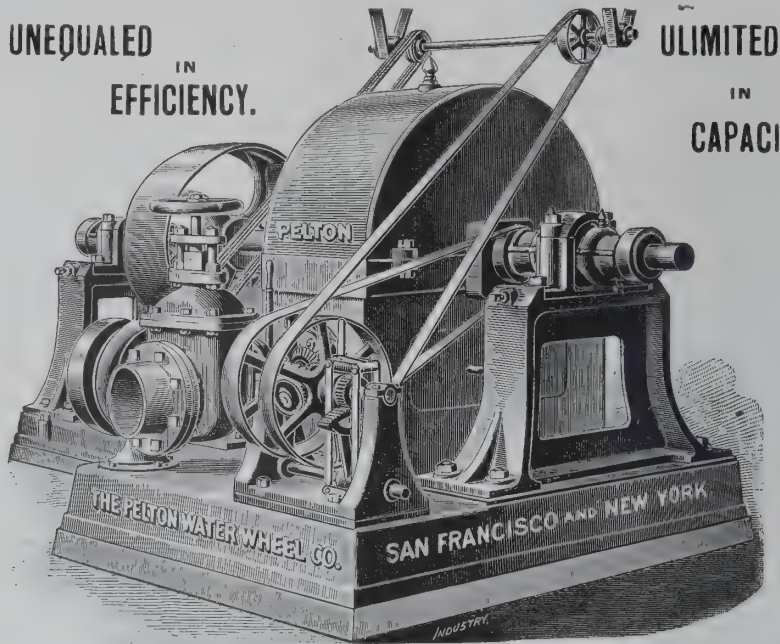
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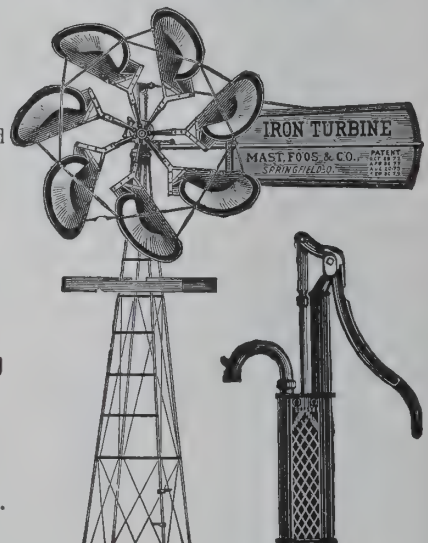
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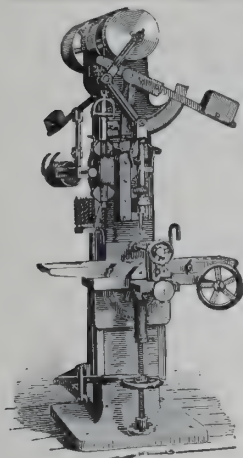
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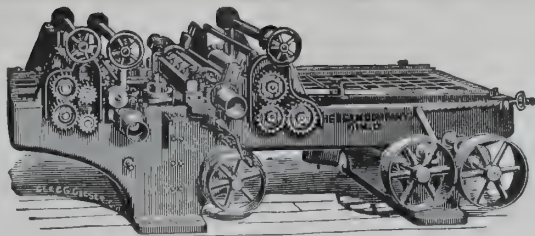
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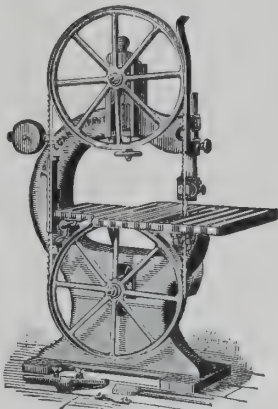


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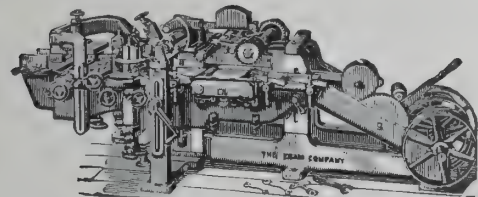


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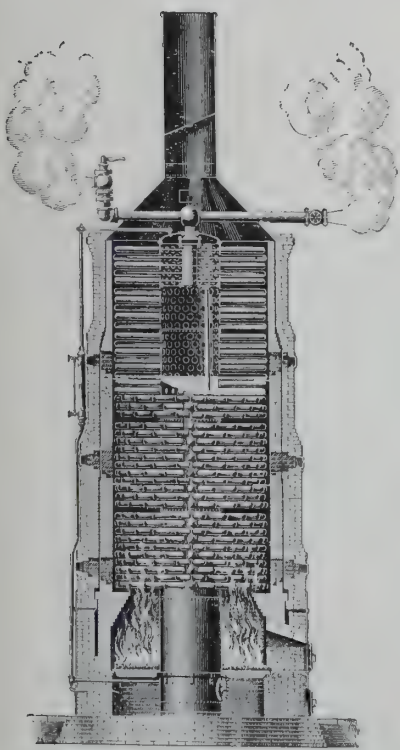
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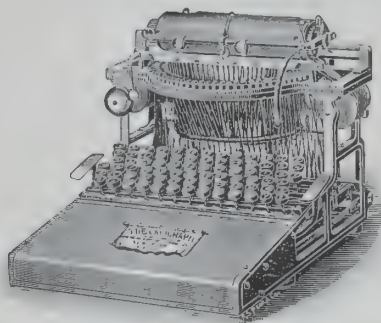
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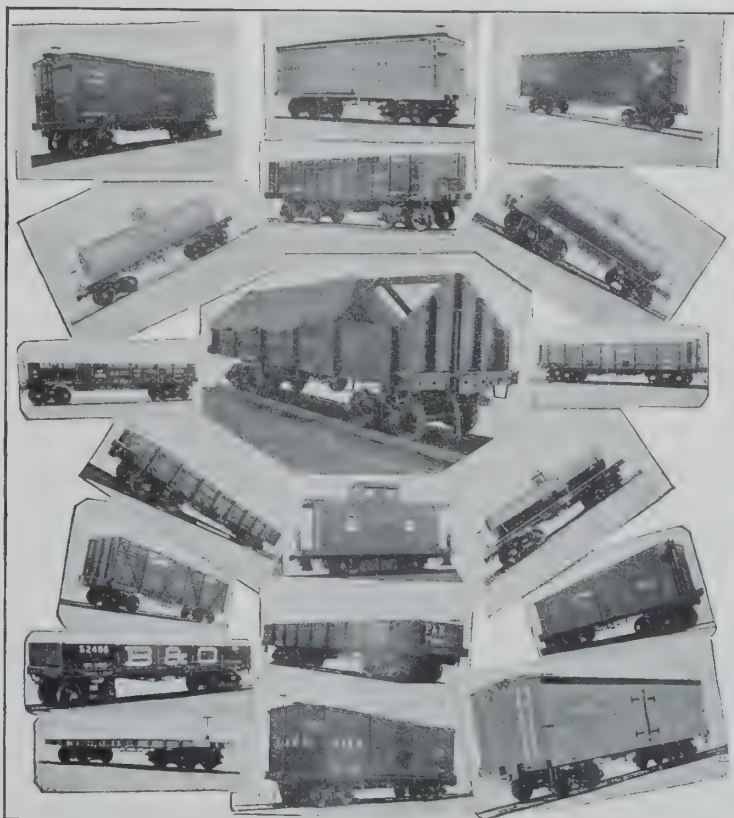
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Fig. 520.

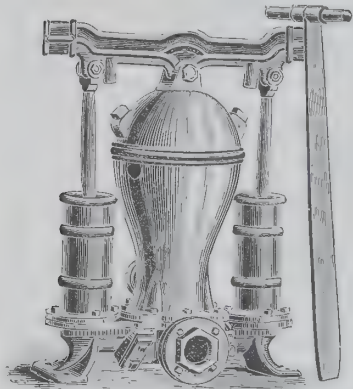
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Fig. 520 is a powerful Two-Cylinder Pump, which is double-acting in operation, simple and compact in build, all parts being readily accessible, and can be operated by levers or power, as desired. The suction plate is always fitted for wrought-iron pipe, and the discharge opening has a brass tube for wiring on hose. Very useful about factories and warehouses.

FIG. 520. SIZES, PRICES, ETC.

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4	3 in.	1½ in.	1¼ in.	\$50.00	\$58.00	\$75.00
6	3½ "	2 "	1½ "	55.00	67.00	88.00
8	4 "	2½ "	2 "	65.00	80.00	105.00
10	4½ "	2½ "	2 "	77.00	96.00	125.00
12	5 "	2½ "	2 "	92.00	110.00	150.00
16	6 "	4 "	2½ "	120.00	150.00	180.00

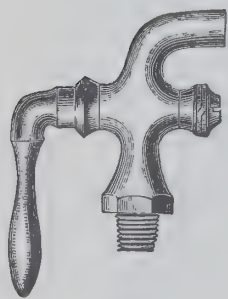
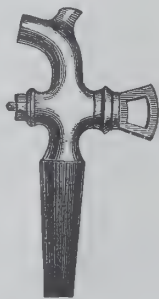
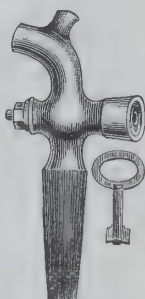
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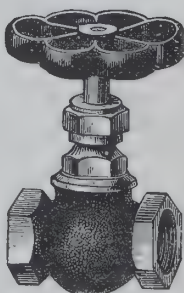
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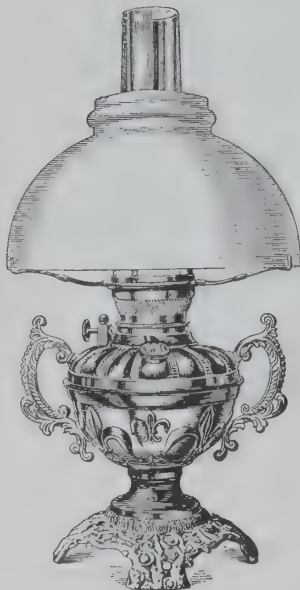
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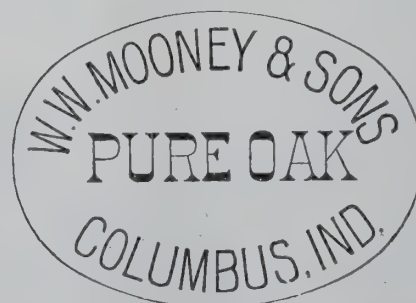
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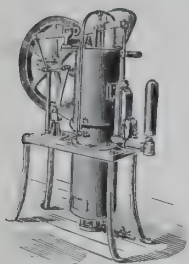
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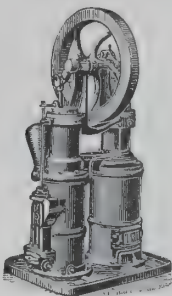
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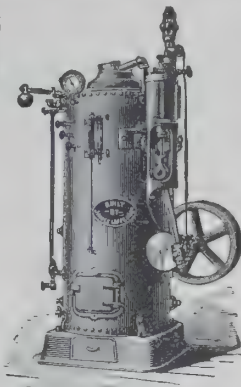
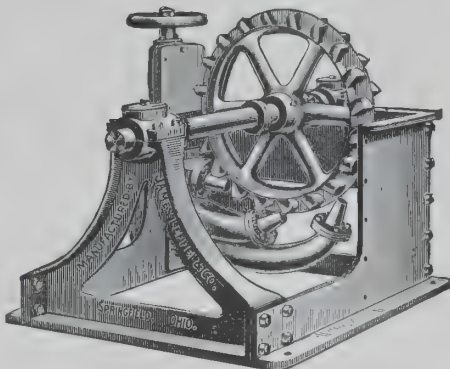
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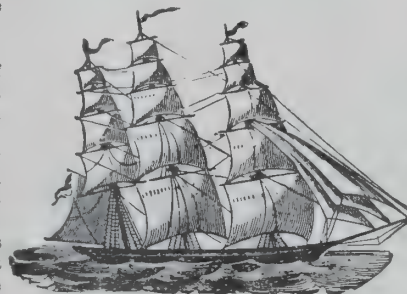
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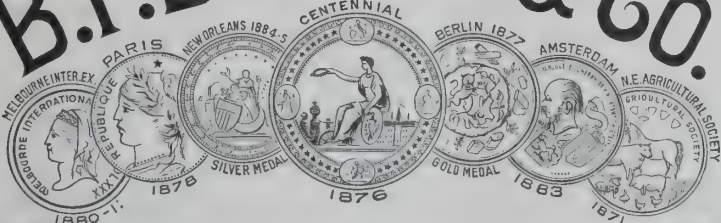
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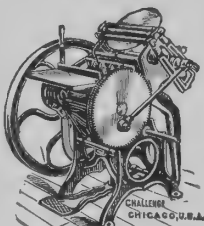
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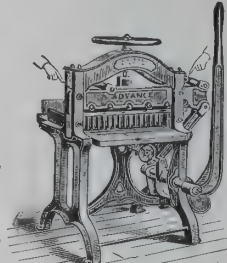
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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	Diago, Frederico C..... —
American Chemical Mfg. & Mining Co.—Shoe Blacking..... 41	Dietz, R. E. Co.—Lamps..... 21
American Lamp & Brass Co.—Lamps.. 8	Diamond Hardware Co.—Stove Polishing Mitten..... 31
American Writing Machine Co.—Calligraph..... 5	Dodd & Williams—Cut Soles and Leather Donegan & Swift—Engines, Injectors, etc..... 47
Armitage-Herschell Co.—Steam Riding Gallery..... 45	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 33
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Doig, W. S.—Box Nailing Machines.... 44
Automatic Injector Co.—Boiler Injectors..... 45	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc.... 23
Ayer, J. C. Co.—Patent Medicines..... 25	Douglas, W. & B.—Pumps, etc..... 4
Ball & Co., Dayton—Shoe Lasts..... 41	Douglass, D. De Forrest—Artificial Limbs..... 45
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Dry Kalsomine & Fresco Paint Works. 23
Barnett Co., G. & H.—Files..... 21	Eagle Cotton Gin Co.—Cotton Gins.... 31
Barton Mfg. Co.—Rubber Stamp Outfits..... 43	Eclipse Cement & Blacking Co..... 41
Baxter Register Co.—Cash Registers... 37	Eco Magnetic Clock Co.—Electric Clocks..... 46
Baxter, Schenkelberger & Co.—Cut Soles..... 31	Electric Emery Wheel Co..... 46
Bay State Cut Sole Co..... 45	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Bignall & Keeler Mfg. Co.—Pipe Threading and Cutting Machines.. 44	Falls Rivet & Machine Co.—Pulleys, Shafting, etc..... 16
Blanchard Machine Co.—Disintegrators Brewer Longitudinal Axle Lubricator Co..... 41	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Brown & Co., B. F.—Shoe Dressing..... 7	Faxon & Co.—O. J. Bicycles..... 23
Buffalo Cycle Co.—Bicycles..... 33	Flagg Mfg. Co.—Shoe Machinery..... 37
Burgess, Edward A.—Box Nailing and Trimming Machines..... 46	Foster Mfg. Co., F. W.—Bail Cocks.... 45
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 45	Fraser Mfg. Co.—Manufacturers of Coffee Machinery..... 31
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 8	Fulton Iron Works—Sugar Cane Mills Furbush & Son Machine Co., M. A..... 44
Chamberlin Mfg. Co.—Stump Pullers.. 44	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 25
Chandler & Taylor Co.—Steam Engines and Boilers..... 42	Gillie, Goddard & Co.—Carousels..... 46
Chicago Metal Stamping Co..... 42	Globe Buffer Co.—Shoe Machinery..... 37
Christen & Sons, F.—Bellows..... 42	Goderich Organ Co.—Organs, Stools, etc..... 45
Collins Plow Co.—Plows, Hay and Straw Presses, etc..... 29	Goubert Mfg. Co..... 16
Columbus Phaeton Co..... 15	Gould Packing Co.—Steam and Water Packing..... 23
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 43	Goulds Mfg. Co.—Pumps of all kinds... 6
Cornell & Co., F. H.—Boiler Oil Injector Crandall Machine Co.—Typewriters.... 45	Gout Mfg. Co., David D. A..... 42
Cretors & Co., C.—Peanut Roasters.... 46	Green Bros.—Watchmakers and Jewelers' Tools and Supplies..... 35
Crosby Steam Gage and Valve Co.—Safety and Water Valves..... 33	Hancock Inspirator Co.—Boiler Feeders Harrington & King Perforating Co.—Mining Screens..... 25
Cunningham Mfg. Co.—Desiccated Egg Food..... 45	Hart Mfg. Co.—Faucet Can..... 42
Deane Steam Pump Co.—Steam Pumps 33	Hartshorn Co., Stewart—Shade Rollers Hastings & McIntosh Truss Co..... 31
Dederick, P. K. & Co.—Agricultural Implements..... 46	Hauthaway, C. L. & Sons—Shoe Dressing..... 8
Densmore Typewriter Co..... 31	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 6
De la Balze Hermanos..... 46	Hazelton Boiler Co..... 5
De Lamater Iron Works—Hot-Air Pumping Engines..... 7	Heller & Bros.—Files, Rasps, etc..... 37
De Laval Separator Co.—Cream Separators..... 37	Holmes & Edwards Silver Co.—Spoons and Forks..... 35
	Horrocks Desk Co..... 45
	Houchin & Huber—Soap and Candle Machinery..... 42

PAGE	PAGE
Huntley Mfg. Co.—Flour Mill Machinery..... 33	Premier Pen Co.—Fountain Pens..... 31
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 43	Pulver & Sons, Peter—Lubricating Compound..... 25
James & Co., George—Soles, Taps, Heels, etc..... 44	Quaker City Electric Co.—Dynamos and Motors..... 42
Jeffrey Mfg. Co.—Detachable Chain Belting..... 43	Randall & Son, P. D.—Bolt Clippers.... 42
Jenkins Bros.—Packings..... 23	Rhyder, W. J.—American Commercial Agency..... 43
Kalamazoo Railroad Velocipede & Car Car..... 48	Root Co., A. I.—Beekeepers' Supplies.. 43
Kelly Axe Mfg. Co.—Axes..... —	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 16
Kelsey & Co.—Printing Presses..... 35	Samson Cordage Works—Cords of all kinds..... 21
Keystone Mfg. Co.—Agricultural Implements..... 23	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Schack, W. G.—Bicycles..... 44
Leffel, Jas. & Co.—Water Wheels and Steam Engines..... 7	Schandamian, D..... —
Lidgerwood Mfg. Co.—Hoisting Engines Marston & Co., J. M.—Foot and Hand Power Saws..... 37	Schollhorn Co., Wm.—Shears and Scissors..... 23
Martin & Co., W. E.—Shoe Dressing.... 45	Schrader's Son, A.—Diving Apparatus. 46
Mast, Foos & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 4	Seymour Cutlery Co.—Henry—Shears and Scissors..... —
McCammon Piano Co..... 21	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
McGarigle, Thos. E.—Rock Drills..... 46	Silver Lake Co.—Braided Cordage..... 42
Miller Co., The E. L.—Paper Cutters.... 25	Simonds Mfg. Co.—Saws..... 37
Milton Car Works—All kinds of Freight Cars..... 5	Slatington-Bangor Slate Syndicate—Roof Slate..... 46
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Smith & Co., H. D.—Carriage Hardware. 8
Mooney & Sons, W. W.—Tanners and Curriers..... 6	Standard Hammock Mills..... 46
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 43	Standard Tool Co.—Twist Drills, etc... 23
Myers, S. F. & Co.—Jewelry of all kinds National Meter Co.—Water Meters.... 19	Stanley Works, The—Brackets..... 21
National Starch Mfg. Co.—Maizena. 29, 39, 40	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 4
New Jersey Paint Works—Copper Paint, etc..... 25	Stubbs' Mercantile Agency..... 43
New Process Twist Drill Co..... 23	Sturtevant Co., B. F.—Pressure Blowers 47
New York City Peanut Roaster Works New York Metal Ceiling Co.—Metal Ceilings..... 42	Sweinhart Co., V. H.—Combination Locks..... 43
Niagara Stamping and Tool Co.—Tools and Machinery for Tinsmiths and Sheet Metal Workers..... 45	Talcot & Co., W. E.—Brick Machinery 46
Nicholson File Co.—Files..... 21	Tanite Co., The—Emery Wheels, Whetstones, etc..... 46
Norman & Evans—Steam Merry-go-rounds..... 46	Tarr, James H.—Copper Paint..... 7
Oberne & Co., Geo.—Leather Supplies.. 46	Thomson Meter Co.—Water Meters.... 48
Odell Typewriter Co.—Typewriters.... 44	Thresher Electric Co.—Electrical Machinery..... 15
Osborne & Co., C. S.—Saddle and Harness Tools..... 46	Tubular Rivet & Stud Co..... 47
Pairpoint Mfg. Co.—Silver Plated Ware Partrick & Carter Co.—Electrical Supplies..... 41	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 21
Pelton Water Wheel Co..... 4	Union Sand Paper & Emery Wheel Co.. 33
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 15	U. S. Buggy & Cart Co.—Wagons and Carriages..... 37
Pike Mfg. Co.—Oil, Scythe, Razor Stones, etc..... 48	U. S. Playing Card Co..... 2
Plume & Atwood Mfg. Co.—Lamps.... 6	Vetter, F.—Typewriter Desks, etc.... 44
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 7	Wagen, John F.—Importer..... 41
Porter, H. K.—Bolt Clippers..... 41	Waterous Engine Works Co.—Saw Mill Machinery..... 19
	Weston Electrical Instrument Co.—Electrometers..... 43
	Whitemore Bros. & Co.—Shoe Dressing and Patent Leather Polish.... 15
	Wiss & Sons, J.—Shears and Scissors.... 41
	Woolsey Paint and Color Co., C. A.—Paints, Colors, Kalsomines, etc.... 7
	Wyckoff, Seamans & Benedict—Remington Typewriter..... 2

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to originate trade, and not to execute orders, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

It does not take goods in exchange for advertising space.

It does not employ the purchasing power of commission merchants and shippers to influence patronage.

NOTICE TO ADVERTISERS.

We desire it distinctly understood by our customers and those who contemplate making use of our publications, THE AMERICAN EXPORTER and EL EXPORTADOR AMERICANO, that space in these journals for advertising purposes is sold only upon the merits of the publications—for that purpose. For this reason, no advertising solicitor or agency has any right, or authority, to agree to perform any special service whatever to obtain orders for advertising.

We make it a practice not to discuss the merits or demerits of other export trade papers. Comments on their value may be made with more propriety by those advertisers who have had experience in the use of such publications.

THE JOHN C. COCHRAN CO.

A NEW WONDER OF AMERICAN INVENTION.

IN THE AMERICAN EXPORTER for March, 1896, only one month ago, we had occasion to describe the great advance made in the art of mining iron ore and preparing it for market by that eminent American inventor, Thomas A. Edison. In our February number we wrote a brief account of the wonderful discoveries made by Professor Roentgen, of Germany, in photographing hidden objects by means of what are now popularly known as the "X rays," and called attention to the fact that an American electrician and inventor was working simultaneously on practically the same lines. At that time, only two months ago, accustomed as we are to notice rapid and important developments in the electrical arts, we expected X-ray photography, or shadowgraphs, as the production is now called, would have a reasonable life of development and usefulness before being in any danger of becoming a "back number." The fact that it has been superseded within a few weeks, and that this has been accomplished by the genius of the inventor so recently brought to the notice of our readers through his achievements in the ponderous work of mining iron ore, is one of the most brilliant and startling announcements ever sent out to the world of commerce. This fact gives added emphasis to all we are continually trying to impress upon the minds of our foreign readers, that for all that is newest and best in modern invention they must look to America.

The new wonder is Edison's Fluoroscope, for a description of which are indebted to the New York *Herald*. The apparatus is described as a box, on the principle of a photographic camera, wide at one end and narrow at the other. At the smaller end a piece of cardboard is attached to fit over the eyes so as to exclude all light. On the larger end of the box is placed a piece of cardboard that has been coated with tungstate of calcium crystals. A vacuum tube is placed on a mercury pump, and, after being exhausted of air, a current of electricity is turned into it from an induction coil. The tube fluoresces in a moment. The object to be examined is then placed in front of it, the fluoroscope is placed over the eyes and instantly the opaque object is seen pictured on the white cloth. In testing the efficiency of this apparatus the bones of a hand have been made visible through an inch and a quarter plank.

The wonderful advance made in the art by Mr. Edison will be quickly appreciated when it is understood that to secure a shadowgraph by Professor Roentgen's process highly sensitized photographic plates are used and much time is required to secure a good negative. For example, a person whose arm or hand was to be photographed had to sit under the X rays from one-half an hour to even an hour and a half. Then the photograph plate had to be developed. This also consumed much time. Mr. Edison's aim has been to devise means whereby the surgeon can see in an instant the nature of a fracture of a bone or the location of a foreign substance. This he has accomplished. The secret of the invention is in the fact that the X rays, after going through the hand, for instance, and outlining the bones in it, are turned into light when they strike the white cloth coated with the tungstate of calcium crystals. This is why the bones can be seen so clearly, not a vestige of the flesh being visible. Over 1,800 chemicals were tried. Seventy-two were found to fluoresce readily with the X rays, but the best one of all, and which produces perfectly marvellous results, is the tungstate of calcium crystals. By its use and the apparatus described all photographing is stopped, because the objects can be seen with the naked eye in a moment, which it had previously taken a long time to show by means of a photograph plate. There may be some things in science more astonishing than this, but it is as difficult to realize what they are as it is to imagine to what development and results this discovery will lead.

Mr. Edison announces that he will claim no patent for this discovery but will donate it to humanity. There will be no "boundary line" disputes to stay the progress of this advance of science. Mr. Edison's home is in America; he is a typical product of American institutions, but this benefaction makes him a citizen of the world whom every country may honor and entertain. This illustrates American nobility.

ONE-PRICE SYSTEM GUARANTEES PROFITS.

IT IS an old saying that goods well bought are half sold. In a broad sense, methods of fixing prices and effecting exchanges are a true gauge of the intellectual and moral development of any person or people.

When transactions were conducted by personal barter between buyer and seller and neither saw any relation existing beyond a single transaction, it was customary for the seller to ask an extremely high price and for the buyer to offer an extremely low price, neither expecting to have the price asked or offered accepted, each knowing "concessions" would have to be made. The price finally agreed upon was arrived at after much tedious and often unpleasant haggling. The remains of this barbarous system of barter still lingers in the minds of some who, regarding themselves as being particularly shrewd, always insist on a "concession" from a quoted price before they will buy. They always want to match their judgment against a manufacturer's desire to sell, and depend upon the operation of these two forces to gain an advantage they think they would not obtain if they did not insist upon a concession. When such buyers come in contact with able salesmen who will deal with them on their own basis they invariably get the worst of the bargain in the general results of many purchases.

Two causes operate to displace the barbarous system of barter with the civilized system of one price for all buyers under the same conditions. One is the fact that seller and buyer can no longer meet face to face. The manufacturer, on the one hand, distributes his goods over large areas and into foreign countries, dealing year after year with those he does not know in many instances. On the part of the wholesale buyer, instead of confining his business to a certain line of goods, the tendency is everywhere to broaden trade by adding one article after another to the general stock until the full supply is drawn from many sources. Under these conditions the seller and buyer are both compelled to employ many agents, through whom their business is transacted. The more accurately these agents are guided by their principals, the less discretion allowed them, the more certain can the principals feel of the results of their business. A manufacturer employing a hundred salesmen has no choice but to fix selling prices for them in a way that he may be sure he will get a reasonable profit. If he does not do this he is liable to find the abnormal profit on some sales entirely neutralized by the low price made for other sales and the net result of a year's business prove a disappointment. In the reverse, a merchant sending his buyers into a market where they must barter for price as well as for quality, style and general utility may find the good bargains of one entirely overreached by the bad bargains of another. These contingencies are reduced to the narrowest possible margin for both the manufacturer and the merchant through the adoption of a one-price system.

Another cause, more potent than the first named, is gradually eliminating bargain hunters from the ranks of established trade. Profit is the object of business. A system that will guarantee a profit with greatest certainty to both manufacturer and merchant is the best system for each.

The best customers a manufacturer can have are those who expect him to ask a fair profit, demanding only one guarantee as to price—that no other buyer shall get a less price under like conditions. When a merchant knows that he cannot be underbought he knows he cannot be undersold. Being assured on this point, his problem is reduced to the consideration, What number of the articles can he sell at the price he must ask in order to secure a profit for himself? He will buy all he believes he can make a profit on. The manufacturer's profit is made only when he has sold and received payment. This is true of the merchant. Viewed in its entirety, it is clearly seen that the interest of the manufacturer is served by assisting the merchant to do a profitable business, because, with such a business he can both buy and pay. It is the interest of the merchant to always give his customers good value for good money, since by doing so he keeps them in condition to buy and pay. The strongest hold one can have upon the other will be

found in the fact that every advantage that can be afforded is invariably given without the asking and that a profit has always been made on the goods furnished, or, if it be the final customer, that he has always had his money's worth. The best guarantee of a profit a seller can give to a buyer is that he cannot be underbought. This guarantee cannot be given without a one-price system.

The interest of a manufacturer extends beyond the delivery of his goods to a jobber, an importer or a merchant and getting his pay for them. It follows his goods, no matter through how many hands they may pass to the final consumer. The price paid by the final consumer must include all costs and all profit of manufacturing, and of all intervening services. This brings to view the true partnership, the solidity of all interests. When one thrives unduly it is at the cost of some other. The impoverishment of any class creates a weakness in the system. Sooner or later it will cause a collapse which will throw the whole system into disorder, from which all must suffer until a readjustment is effected and normal conditions are restored. Business stability and profits are both guaranteed by the one-price system.

Confirming this presentation of the subject the following is quoted from *The Hub*:

"There was a time when every buyer expected to be asked a price above what the seller was willing to take, and the latter always expected to be asked to make a reduction. An asking and a selling price was the everyday method of doing business. All this is greatly changed. There are men who still cling to the old, with the idea that in one way or another they will be able to get the best of the bargain, but the great majority of buyers prefer the one-price system, and not a few refuse to deal with men who have the reputation of having two prices. If a buyer knows that the prices quoted him are as low as any other man can obtain he simply decides whether they are within his limits, and whether the goods please him and acts accordingly; but where there is an uncertainty some extra inducement must be offered him to overcome the feeling that he is liable to pay more than some other customer would. One excuse for cutting prices is that a competitor is doing so; but even then it does not offer an apology for instability. The one true method is one price to all, no matter what that price may be."

WORLD FEDERATION OF COMMERCE.

NO narrow policy of imperial federation will satisfy American enterprise. Being kin to all the world American manufacturers reach out to supply the wants of every nation. They seek to possess every field by fair dealing, making their trademark "a guarantee for honesty and good money's worth," and supplying goods, a preference for which is expected, not on the basis of sentiment, but for the trade-compelling reasons of greater excellence for price charged.

In a World Federation of Commerce, individual manufacturers, no matter how great their undertakings may be, are but small factors. The great lines of transportation, the enormous mass of commodities carried from country to country by the ceaseless flow of the current of commerce, gather unto themselves the prestige and power of all manufacturers of the nation. As a necessary sequence manufacturers organize themselves into voluntary unions to be better able to watch over their mutual interests, and governments create departments of state to supplement and assist the progressive work of those engaged in manufacturing industries.

THE NATIONAL ASSOCIATION OF AMERICAN MANUFACTURERS.

In January, 1895, a voluntary movement was initiated designed to bring all American manufacturers into close touch for the purpose of making their influence and wishes effective in shaping national policies, foreign or domestic, pertaining to their welfare. This movement is expected to secure the creation of a new cabinet office, to be known as the Department of Commerce, to which the U. S. Consular Service will be transferred, thus placing it in direct touch with the commercial as distinguished from the diplomatic in-

terests of the country. The hint thus given was quickly acted upon by the English Colonial Secretary.

On the 4th of September, 1895, the following dispatch was cabled from London to *The Leader*, Melbourne, Australia:

"Is it reported that the Salisbury government intends to appoint a committee of practical commercial experts to advise Mr. Joseph Chamberlain, Secretary of State for the Colonies, in the carrying out of his intentions for developing the commerce and the material resources of the colonial dependencies of the empire?"

The second national convention of this association was held in Chicago in January, 1896, at which time Mr. Theodore C. Search, of Philadelphia, Pa., was elected president. An indication of the spirit of the association is given in the following from his address:

"I believe that American manufacturers ought to cease standing on the defensive. What we need is a policy that means aggression that will maintain our principles, correctly conduct our business and keep us in friendly relations with the world at large. Only let us have courage to meet all questions open handed and open-hearted, on a fair field and we shall push our industries and business throughout this nation and over all the world."

LAND AND OCEAN CARRYING TRADE.

AMERICANS are accustomed to the air of assumed superiority with which all Englishmen speak of their merchant marine. That it is something to be proud of none can deny. Americans will be exceedingly proud when they have a merchant marine fully its equal. Let none suppose, however, that because America has no merchant marine now it will never have one. A more fatal error cannot be conceived.

For 30 years America has been developing an internal industrial force that is fast reaching the limits of its ability to contain. Already it is giving unmistakable evidence of impatience at restraint and is overreaching the national boundary in every direction. This wonderful force is seen more fully in the development of domestic transportation than in any other single aspect. For 20 years Americans spent an average of \$1,000,000 per day in railroad construction. Certainly this enormous rate of expenditure was not maintained without a corresponding growth of industries contributing to the support of such colossal transportation facilities. The wealth of the country has been trebled in 30 years, and its industrial power has been increased several hundred per cent. This is most vividly illustrated by one incident of industrial development, the use of steam power. Horse-power of steam in use in 1860 and 1895, compare as follows:

	1860.	1895.
Fixed	800,000	3,940,000
Locomotives	1,800,000	10,800,000
Steamboats	900,000	2,200,000
Totals	3,500,000	16,940,000

Will any one attempt to predict, in the light of such facts, what Americans would have accomplished if circumstances had directed their energies to supplying ocean transportation instead of land transportation?

Circumstances have changed. For the future American energy will be directed to supplying means for ocean transportation. The era of railroad building has created paths for the surplus production of the United States to the oceans. From the inauguration of the railroad era to the present time, the growth of wealth in the prairie and Pacific States area has been enormous, but the most remarkable fact of all is the increase of products suitable for exportation, agricultural and manufactured. Will American energy and thrift permit these products to lie profitless at the water's edge because they have been too much absorbed in creating internal improvements to admit of providing for water carriage to foreign markets?

Those who guide themselves by such conclusions will be self-deceived. The creation of highways on the oceans is the logical sequence to the building of highways on land. Having built the one Americans will build the other. Who is able to predict the dis-

placements and readjustments that will occur in the currents of the world's commerce when the uncurbed energy of American enterprise enters this field of development?

A hint of what may be expected is given in what Belgium is reported to be doing. The Belgian Government, it is said, has completed arrangements for running a line of cargo steamers daily between Ostend and London. The ships will carry freight almost gratis, and although the scheme is being started ostensibly in aid of the agricultural industry around Ostend, it is generally believed that the aim is to secure a lion's share of all kinds of cargo shipped to and from Great Britain by the north of Europe, concentrating at Ostend. The Belgian Government calculates that the loss from carrying merchandise for next to nothing will be much more than made up by increased revenues from expanded business on the Belgian state railways, over which most of the goods would pass. Of course, indirectly, the scheme is expected to encourage Belgian industry generally. "The project," *The Hardwareman* of London, adds, "is regarded with considerable uneasiness by British shipowners."

Should the great land transportation lines of America decide to make American products from the water's edge to all foreign parts in American built cargo steamers, gratis, for the sake of the increased revenues they would gain on the land haul, and to encourage American industry generally, what would become of the English merchant marine and the great scheme of imperial federation?

CONTINUED INCREASE IN EXPORTS OF AMERICAN MANUFACTURES.

NOTWITHSTANDING the disquieting conditions that have threatened the stability to trade relations between nearly every civilized country since the beginning of 1896, the returns of the Bureau of Statistics show that exports of American manufactured products are now greater than in any former period of American history.

This is especially gratifying to the millions of American wage-earners who are thus demonstrating that well-paid skilled workmen, operating scientifically designed machinery, can produce commodities at a cost that will enable them to undersell the product of less-paid workmen, using less effective machinery and make a satisfactory profit for the capital employed.

The returns for February, 1896, give \$17,265,164 as the value of American manufactured exports for that month, and for the first two months of 1896 the value is nearly \$36,000,000. If this rate is maintained for the whole year, 1896 will be memorable as by far the most prosperous year on record for the sale of the products of American labor in foreign markets. To appreciate the momentum the export of American manufactured commodities is acquiring, it is only necessary to remember that since 1890, in no year until last year, did such exports exceed \$184,000,000. Last year they were \$200,000,000, and for 1896 they promise to exceed \$215,000,000.

One feature of this growth that should impress itself on the minds of all foreign importers is the fact that it is a steady progression, showing, on the whole, that every point gained is held, and proving no less clearly that foreign importers of American manufactured products are not only holding but increasing their trade. This is exceedingly important, as it will suggest to all sagacious importers in foreign markets that a future expansion of their business can be gained more surely by extending their relations with foreign manufacturers than in any other way. It is as necessary for a merchant to handle goods that will create an ever-increasing demand as it is for a manufacturer to produce articles that will find a ready sale.

As has been so well pointed out by English and Colonial writers in explaining the success of American competition, the style, finish, adaptability and price of American goods all appeal to the taste, utility and self-interest of buyers so strongly that orders are given for them in preference to all other makes. If American goods appeal to users in this way importers will be led to put them in stock by the force of natural attraction. Those importers who are in business for the money they can make should lose no time in getting posted on American goods.

WHAT JOSEPH CHAMBERLAIN WANTS TO KNOW.

ON ANOTHER page will be found the full text of the request for information made by the Hon. Joseph Chamberlain, Secretary of State for the Colonies, England. This information is designed to be made the basis of a system of preferential duties between Great Britain and her colonies, on which is to be founded a great scheme of Imperial federation, the national policy of which will be *English markets for English manufacturers*. Does this indicate that England has reached that point of intelligence at which China arrived some centuries ago when it built its great wall and adopted as its national policy *China for the Chinese*? In the ever-moving cycles of time is the day to arrive when Orientals will be obliged to bombard English ports to force an opening for the sale of their products?

The introductory statement in Mr. Chamberlain's circular is highly significant:

"I am impressed with the extreme importance of securing as large a share as possible of the mutual trade of the United Kingdom and the colonies for British producers and manufacturers, whether located in the colonies or in the United Kingdom."

For over a century England has given the world to understand that it depended for commercial supremacy solely upon its ability to undersell all comers in our markets. At the very time when Mr. Chamberlain was preparing his circular Lord Salisbury was boasting that "We (the English) are equal to any competition that may be opposed to us." Now we have unmistakable admonitions of a coming change in England's national policy, preparatory to an attempt to realize an ambitious dream of Imperial federation. Those who have the sagacity rightly to interpret the unseen forces that guide the movements of the world's commerce will not be deceived by the spectacular show of Imperial federation. They know it is merely a device to divert attention from the real fact that English manufacturers are being beaten in every market of the world, including the English colonies and the home market of their own islands. In scheming for Imperial federation the managers of its destiny are only endeavoring to weave a mantle of glory with which to cover England's commercial defeats and decadence. This fact will clearly appear when it is known what Mr. Chamberlain has learned from the responses to his inquiries.

WHAT AMERICAN MANUFACTURERS WANT TO KNOW.

IF AMERICAN manufacturers were to formulate an inquiry to be answered by American consular agents it would be difficult for them to advise one more serviceable to them than the one Mr. Chamberlain has formulated for the information of the English Colonial Secretary.

It is an unnecessary expenditure of energy for one to undertake to invent a thing he can find ready made. Having an inquiry so admirably formulated for the purpose of securing information, we are sure American consular agents, not only in the British colonies but in England, and in all countries, wherever they may be located, cannot do American manufacturers a greater service than to diligently obtain and transmit to the Secretary of State for the United States full information in every detail called for by Mr. Chamberlain. The powerful pleadings of self-protection urge American manufacturers to be adroit and energetic in preparing and executing measures that will most surely enable them to hold and extend every point of advantage they have gained in export trade. With this object in view, we know we voice the desire of every American manufacturer when we request all American consular agents to supply them with the information asked for by the English Government. The American Secretary of State should prove as capable of handling this information for the benefit of American interests as the English Colonial Secretary can do for English interests.

Americans do not look for an impossible Imperial federation, to create which people having diverse natural resources must be

held together by artificial means. They seek a universal treaty of commercial amity, guaranteeing the stability of a universal peace and giving stability to industrial conditions. For commercial supremacy America depends upon the cohesive power of self-interest, intelligently directed.

NOT MERCHANTS, BUT PUBLISHERS.

THE highest compliment that can be paid to THE AMERICAN EXPORTER is given when a foreign buyer remits his funds and sends his orders to it for execution. Those who have sufficient confidence in the ability, judgment and honesty of its publishers to do this, and it has frequently occurred (especially since we sounded a note of warning against "commission pirates"), will certainly trust our judgment when we recommend them to arrange with honest American export commission merchants to look after their interests in this country, as few, if any, publishers have any experience in the buying for export. These commission merchants make a constant study of the business and understand all its requirements. They are experts in their special line and may be found in every export market.

We are not buyers or buying agents, and have not the desire, had we the qualifications, to infringe upon the business of those who are devoting themselves to that vocation. THE AMERICAN EXPORTER is published for the purpose of assisting foreign buyers in every possible way to establish satisfactory trade relations with American manufacturers. While we cannot ourselves undertake to receive and execute orders, we shall be glad on application to furnish any foreign correspondent, who is desirous of establishing trade relations with this country, a list of reliable American export commission merchants. We thank our friends in foreign countries who have, unsought by us, sent us their orders, thus paying us the highest compliment anyone in our position can receive, and assure them that our only desire is to so perform the service we have selected for our vocation, that we may deserve the respect and confidence alike of American manufacturers, export agents and foreign importers. We are interested in the business of every American manufacturer who is seeking a foreign outlet for his goods, and the mission of this publication is to promote the export trade of this country. When the foreign importer of American goods makes money on them, he wants more. When American manufacturers make money on export trade, they want to extend it. When prosperity comes to our patrons we feel sure it will come to us. Reliable export commission merchants are plentiful in New York, and it will be in most cases to the best interests of foreign buyers to send their orders to such houses instead of directly to the manufacturer.

Foreign Competition in the Colonies.

THE following dispatch from Mr. Chamberlain, the Secretary of State for the Colonies, on the subject of trade between the United Kingdom and the colonies was drawn up and issued after consultation with the High Commissioner for Canada, the Agents-General of the other self-governing colonies, and the principal chambers of commerce in the United Kingdom:—

DOWNING STREET, November 28, 1895.

MY LORD—SIR: I am impressed with the extreme importance of securing as large a share as possible of the mutual trade of the United Kingdom and the colonies for British producers and the manufacturers, whether located in the colonies or in the United Kingdom.

2. In the first place, therefore, I wish to investigate thoroughly the extent to which in each of the colonies foreign imports of any kind have displaced, or are displacing, similar British goods, and the causes of such displacement.

3. With this object, I take this opportunity of inviting the assistance of your Government in obtaining a return which will show for the years 1884, 1889 and 1894—

(a) The value (if any) of all articles, specified in the classification annexed, imported into the colony under your Government from any foreign country, or countries, whenever (and only when) the value of any article so imported from any foreign country, or countries, was 5 per cent. or upwards of the total value of that article imported into the colony from all sources, whether within or without the British Empire, and when the total value of that article imported was not less than £500.

(b) The reasons which may have in each case induced the colonial importer to prefer a foreign article to similar goods of British manufacture.

4. These reasons (which should take the shape of a report on each article,

separately, of which the foreign import exceeded 5 per cent. of the whole import and of which the total value imported was not less than £500, as defined above) should be classified and discussed under one or other of the following heads:—

(a) Price (delivered in the colony) of the foreign article as compared with the British.

The term "price" is not intended to include the duty (if any) levied in a colony; it is the ordinary price in bond, and this should be clearly understood in making the report.

But where it is found impossible to give any except the wholesale price (duty paid), this should be stated, and the exact amount of duty entering into the price should be given.

In treating of price, regard should be had to cost of transport, facility of communication of any given country, subsidies to shipping, special railway rates, bounties on export, terms of credit or payment given by British or foreign exporters, rates of discount, etc.

(b) Quality and finish, as to which full particulars shall be given.

(c) Suitability of the goods for the market, their style or pattern.

In connection with this, and in illustration of the reasons for the displacement of British goods of any class, it is important that patterns or specimens of the goods preferred should be sent home, unless the bulk is very great. This will be necessary chiefly in those cases where the difference cannot be fairly described in writing.

(d) Difference of making up or packing, as to which full particulars should be given.

(e) False marking, such as piracy of trademarks, false indications of origin, or false indications of weight, measure, size or number.

(f) Any other cause which may exist, should, of course, be stated.

It sometimes happens that imports which actually come from foreign countries pass through Great Britain and are included in colonial statistics as British. Where this is a matter of common knowledge I shall be obliged to you if you will treat of these imports under the headings embraced in this paragraph, notwithstanding the fact that they are not distinguished in the returns.

5. With a view to facilitating the returns, I annex to this dispatch a draft of a form under which the particulars above requested may be returned; a list of commodities which is intended, as far as possible, to secure uniformity in making the return; and a schedule of instructions as to filling up this return, which I would beg you to commend to the attention of those on whom the preparation of the return may fall.

6. To select the best classification to guide your advisers in their investigations has been a task of some difficulty. Most colonies have classifications of their own, usually admirable of their kind; but as they have been mainly compiled for the special tariff purposes of each colony they differ considerably from one another, and do not afford a basis of classification generally applicable to all colonies. I have, therefore, on the whole, thought it best to adopt the condensed classification used by the Board of Trade in the Annual Statistical Abstract for the exports of the United Kingdom. At the same time I suggest that those responsible in each colony for furnishing the returns for which I am asking should expand their returns under each chief heading by such detailed subheads as may be suggested either by the ordinary colonial returns, or by the course of trade in the particular colony; and in this connection I append a schedule of subdivisions suggested by various chambers of commerce in this country.

7. I am further desirous of receiving from you a return of any products of the colony under your Government which might advantageously be exported to the United Kingdom or other parts of the British Empire, but do not at present find a sufficient market there, with any information in regard to quality, price or freight, which may be useful to British importers. I mention the matter here that you may be prepared with information; but I am contemplating the preparation of a further and fuller dispatch on this branch of the subject.

8. I am well aware how much has been, and is being, done in this direction by the self-governing colonies through the High Commissioner for Canada and through the Agents General, and also by the Imperial Institute, the Royal Colonial Institute, and other public bodies.

I am glad to have this opportunity of expressing my admiration for the excellence of this work; but in a matter of such importance, no additional efforts or opportunities of acquiring information can be superfluous.

9. I shall be glad to have these returns as soon as possible, and shall greatly appreciate your expedition in the matter.

I have the honor to be, your most obedient, humble servant,

J. CHAMBERLAIN.

As Some See It—The Bright Side.

THE superstition that "the king can do no wrong" still lingers in many minds, depriving them of the power to criticise whatever may be done by their rulers or their government. This is illustrated by the spirit in which some British and Canadian journals greeted Mr. Chamberlain's circular. To them, the idea of imperial federation is such a brilliant mantle of glory, they are unable to see the commercial decrepitude it has been prepared to cover. Only a few selections can be given, as space for this subject must be limited.

We heartily congratulate the Right Hon. the Secretary for the Colonies upon the step he has taken, and trust it may have most beneficial results upon the British trade and British traders. Such a departure was badly wanted, and it is a fitting outcome of the great business acumen and keen-sighted enterprise of Mr. Chamberlain.—*The Ironmonger, London.*

The full text of the dispatch of the Colonial Secretary of State on the sub-

ject of trade between the United Kingdom and the colonies has earned no more than it deserved in being warmly praised by practically the whole press of the country. The imperial scope and aim of the document afford further testimony that we have in Mr. Joseph Chamberlain a shrewd business man as Colonial Secretary. Our relations with our colonies are mainly business relations; to carry these on successfully, and improve them at the same time, need more of the trained business quality and less of diplomatic finesse than is looked for in an ambassador at a foreign court.—*The Hardwareman, London.*

Mr. Stanhope had made a beginning in the imperial conference of 1887, and Lord Kuntford had followed him in aiding that scheme effectively and earnestly, but neither of them was a statesman in the wide, true sense of the word, and their general policy was somewhat weak and ineffective. Mr. Chamberlain is a very different type of man. His first effort in the direction of imperial unity has been a wise and fitting one. It means that England has at last awakened to the importance of colonial commerce, and to the advisability and possibility of mutual aid in developing the resources of the colonies in the interest of British people at home as well as those abroad. Hence Mr. Chamberlain's willingness to subsidize our proposed fast steamship line and to help the Australian and Canadian cable. Hence the significance of his inquiries about Imperial trade and the causes of its ebb and flow. It is possible that wars and rumors of wars may now defer the development of this imperial policy.—*The Canadian Manufacturer, Toronto.*

AS OTHERS VIEW IT—THE DARK SIDE.

If there had been no reason to believe that British manufacturers were being beaten in competition in their own or in colonial markets, there would have been no occasion for an inquiry as to the causes of their defeat. Such an inquiry, however, if pushed with all possible vigor, and the results are fully and broadly published, can but advertise to the world of commerce the causes of both this defeat and of the success of the victors. It is true it may show British manufacturers wherein they must make improvements to enable their commodities to compete with the products of other countries, but it will at the same time show buyers throughout the world where the best commodities can be bought at once, without waiting for the slow development of remodelled industries that at most are only copying what others have done in a better way. In this result the inquiry can only work harm to those it was intended to benefit. Some British and colonial journals have been quick to see this vulnerable point in the grand scheme of imperial federation and have punctured a hole in the mantle of glory through which they show the commercial weakness it is intended to cover.

It is feared that this fact may prevent the publication of all the Colonial Secretary learns. So much the more should it urge American consular agents to take up the work and carry it to completion, not for the British Colonies only, but for all countries.

The following selections will prove highly interesting to all importers of manufactured commodities:

Our increased business with England in recent years has been very gratifying; at the same time we regard our increased trade with any country as also very gratifying. The storekeeper is pleased to have the patronage of his relations, but to secure their custom he is not prepared to put any obstacles in the way of other customers. Business is business, and the dominant factor in business relations must ever be that of self-interest. With the United States alone England does a trade as large as with the whole of her colonies, India not being counted. It is remarkably sanguine to expect preferential duties imposed by England and her colonies, to shift over \$1,700,000,000 of the trade between her and the outside world to the trade with British possessions.—*The Canadian Journal of Commerce, Montreal.*

The dispatch of Mr. Chamberlain, Secretary of State for the Colonies, in regard to British trade with the colonies, has been published in every colonial newspaper. Mr. Chamberlain has no idea, we believe, of attempting to get American and German goods excluded from colonial markets by any fiscal expedient, involving differential duties. That would be a difficult thing to manage, even if the colonies were willing to make the necessary changes in their tariffs.

When the cable message was received stating that Mr. Chamberlain intended to issue this dispatch, one of our staff went through some of our whole sale warehouses in Auckland, and satisfied himself that the preference given to American and German goods in several departments was due to their greater excellence, and especially to greater adaptability of the foreign articles or tools.—*The New Zealand Herald, Auckland, Australia.*

May I be allowed to say that the president of the Board of Trade might go a step further and institute an inquiry on Mr. Chamberlain's lines in connection with the home trade of this country? Foreign producers and manufacturers are, I believe, even more active in the home than in our colonial markets, and if it be important to secure the trade of our colonies for British manufacturers, how much more important must it be to secure the trade of the United Kingdom itself?—*H. E. H., in the British Trade Journal, London.*

A prudent man of business is chary of imparting the results of his experiences to competitors, and he keeps the details of his work and procedure to himself. The colonial governors may apply to the importers for information, but we doubt whether any facts will be drawn from them which are not already perfectly well known from the reports of foreign consuls, from the Colonial Office documents, from trade journals and newspapers, from the Chambers of Commerce, and from numerous blue books at home and abroad.

What our manufacturers would like to know is how they can make the same article to sell at the same price. If we can do that, we shall get the trade; if not, the Colonial Office dispatch can only do harm—unless, indeed, it should lead to some arrangement by which we can put goods more cheaply on the colonial markets than our competitors. Differential tariffs appear out of the range of practical politics. They are bound up with a system of imperial federation; and if nothing remains but a renewed supply of information as to what the foreign producer is doing, we may be worse off than before.—*The British Trade Journal, London.*

A CORRESPONDENT for one of our daily papers reports that evidence of great activity in the affairs of Japan, China and the countries of the Far East comes to the legations of these countries in Washington.

As a result of Japanese prosperity, that country has not only determined to largely augment her navy but also to establish commercial steamship lines between the United States and Japan. The Japan Steam Navigation Company is prepared to enter this new field, running between San Francisco and Yokohama in competition with the already established lines.

Cuba and American Exporters.

[From Our Special London Correspondent.]

LONDON, April 1, 1896.

THE course of events between the United States and Cuba has been keenly watched in England and throughout Europe, because Cuba, although one of the less important markets for British goods, is still a country which offers considerable inducements to our exporters of machinery, hardware, etc. Unfortunately, our monthly returns, issued by the Board of Trade, do not show the value of our trade with Cuba; but the statistical abstract published by the Washington Bureau indicates a most remarkable decline in American exportation thither. It is thought that probably the failure of reciprocity largely accounts for this; but no doubt the real cause may be traced to poverty of the country caused by internal dissensions and by similar economic and political reasons.

But even in very bad times—such as the past year proved—exports of American manufactures to Cuba have maintained a fairly good position, although 1895 frequently compares unfavorably with 1894. American exporters shipped farm implements thither to the value of \$52,000; books, \$22,000; carriages, cars, etc., \$88,338; cloth, \$27,578; miscellaneous cotton manufactures, \$14,482; builders' hardware, etc., \$190,042; machinery, \$505,628; sewing machines, \$18,035; leather soles, \$7,107; manufactures of wood, \$147,431. Now most of these figures express the low-water mark of American trade with Cuba, and are in some cases 30, 40 and even 50 per cent. below the figures for 1894, as, for instance, in the case of hardware, machinery, sewing machines, farm implements, etc., all of which have decreased from 30 to as much as 70 per cent. as compared with 1894.

That Cuba offers a fine field for American enterprise is certain, and if she had good government and an energetic, go-ahead people the country would thrive immensely. The day does not seem to be so very far distant when Cuba will become a commercial dependency of the United States. Of course this does not necessarily imply any political relationship. The trade between Spain and Cuba is merely nominal; say about 10 per cent. of the total of Cuban exports go to Spain, while the balance goes mainly to the United States.

It is now 15 years since Consul Hall wrote from Havana on this subject. He used these words: “* * * The economical necessities of the land attract her toward the United States, while the origin, language, customs, religion and traditions of her people enforce her political ties toward Spain. This conflict between material necessity and sentiment is probably the principal cause of the distress now pending in Cuba (February, 1881), and it requires but little foresight to perceive that this conflict must terminate either in complete commercial assimilation with the United States or in the ruin of her material interests and disappearance of her civilization.” Those words seem to be quite applicable to day, as they were 15 years ago.

It is only within the past decade that our manufactures have found a home in Cuba. Before that time the cutlery, hardware carriages, machinery and textiles used were mainly from England. But, as I have already shown, that is the case no longer; and in ordinary times the Central States hold a very fair share of the imports.

What are the lines which American manufacturers may hope to excel in? Implements of all kinds would be welcomed and much better trade could be done if the people had more money. For instance, the American plow, cultivators, rakes, hoes, forks, machetes, coffee cleaners, etc., could be used to great advantage. As regards hardware, all sorts of metal goods for house furnishing are wanted and are appreciated by the Cubans. The American tools for carpenters and builders—such as planing machines, molding machines, machinery for making windows and shutters, hand and power drills, mortising machines, saws, chisels, and so forth, are much wanted. In all these lines the Americans excel and can furnish really good tools.

The sugar industry is, as every one knows, the mainstay of the island. For this purpose American makers can supply mills, centrifugal apparatus, vacuum pans, stampers for hogsheads and box sugars, and fire brick. If really good machinery were employed the present bad state into which the trade has sunk might be greatly remedied.

The American carriage is rightly popular in the island, being well adapted for the country by reason of its lightness and strength. Sewing machines, of course, are supplied by the United States, which is the natural home of that invention.

It has taken some years to overcome the prejudice against American manufactures, especially strong in this case because the Spaniard is intensely conservative, reluctant to change any of his methods. It therefore speaks well both for American enterprise and the excellence of the goods themselves that they have made such a lasting impression and found an abiding place in the Cuban trade. Cuba need not go to Europe, over 3,000 miles away, when she can purchase everything she wants from the United States, which is only one-third of that distance. A good line of steamers would place America on an equality with Europe as regards transport, and given this there should be no serious difficulty to surmount. There can be no doubt that Cubans prefer American goods, else the trade—quite apart from the reciprocity rage—would not have sprung up between the two countries. The advantages of those goods are that they are reliable, well made, reasonable in price and always obtainable at short notice. With the advent of better times in Cuba it is to be hoped that American imports will revive in a corresponding degree.

—It has been estimated that electric railways have displaced in the United States no less than 275,000 horses, and the movement has not yet been stopped.



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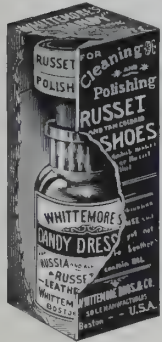
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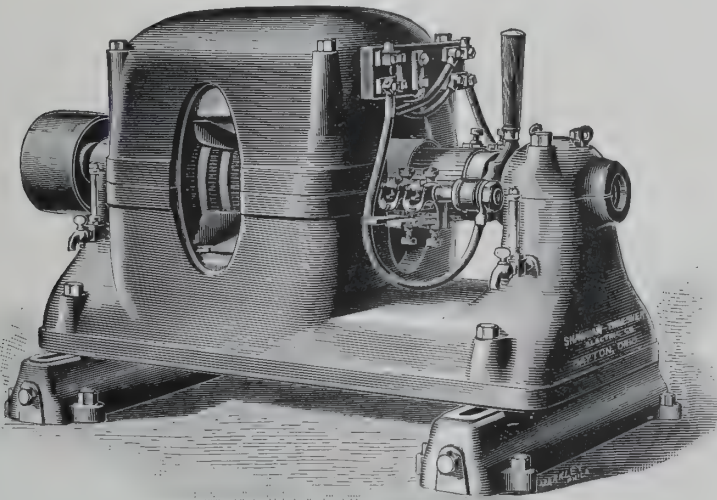
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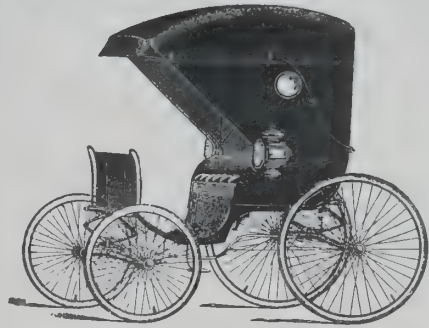
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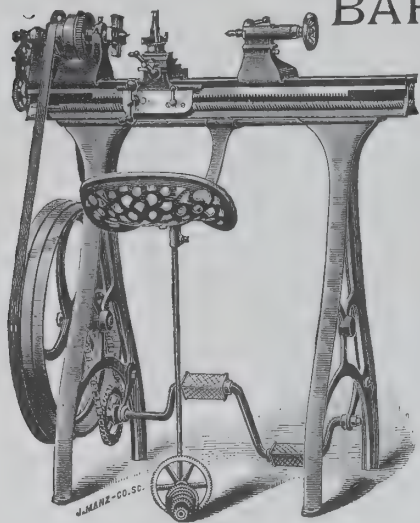
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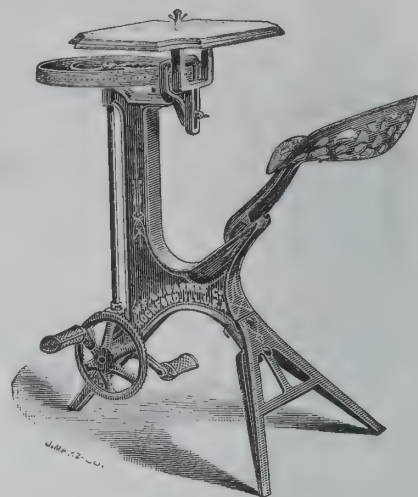
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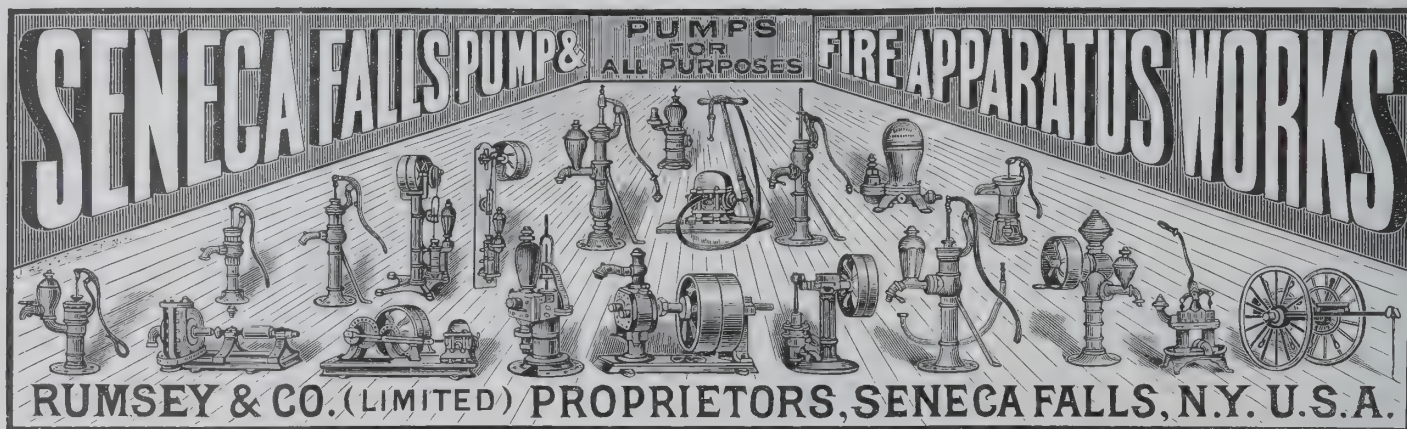
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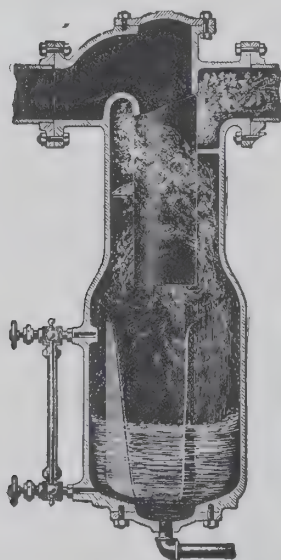


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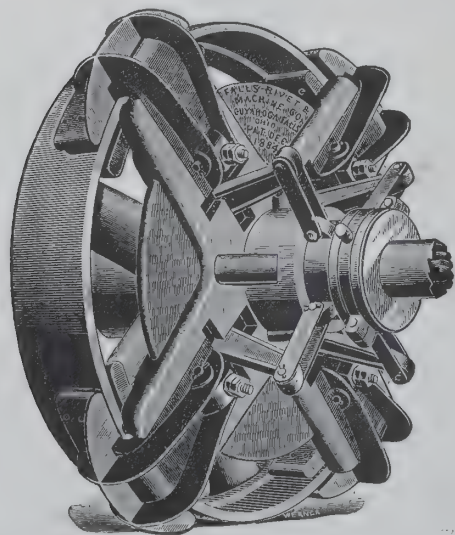
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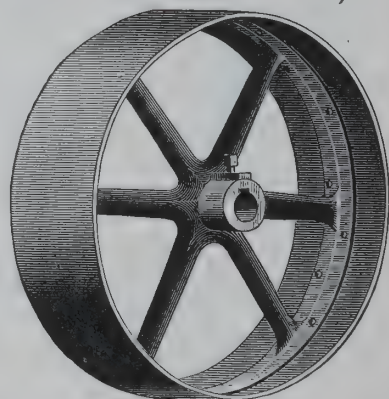
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A New Gas Motor.

A MOTOR has recently been invented which breathes in much the same manner as does man. It inhales the air, which is drawn into and expanded from a delicate system of machinery, practically the lungs of the new invention. Another portion of the construction works off the waste after the power has been absorbed and made use of, and acts in much the same capacity as do the kidneys in the human anatomy.

The inventor, who claims all this for his unique engine, is Reuben H. Plass, consulting and mechanical engineer, Brooklyn. He calls it the Air-Gas Propulsion Motor, by means of which he hopes to revolutionize the street-car traffic of the world, and do away with the overhead trolley wires, underground cables, and all the noise, discomforts and inconveniences of the present system in use. The Metropolitan Traction Company has already ordered one of the air-gas engines, which it proposes to adjust to one of its cars to experiment with.

With it in use no central power plant, like that required by the cable, trolley or compressed air system will be necessary, and the trench now needed for the cable, subway or underground trolley wire can be filled up as useless. The new engine is so compact and complete in itself that it requires no permanent or portable works for the supply of the gas or compressed air, and it is so simple that no skilled engineer or mechanic will be necessary to run it. In describing the new motor, Mr. Plass says:

"When once started the air-gas engine can be run for twenty-four consecutive hours, and it will not require fire, flame or heat to produce the gas from which the power is derived. The starting, speeding and backing of the vehicle is done by an auxiliary device, supplementary to the propelling power, which also operates an independent emergency air-brake, lights the vehicle and headlights, by means of either gas or incandescent electricity, and in winter heats and ventilates the vehicle by passing the jacketed hot water or the exhaust hot air from the motor through radiating pipes in the car. The power costs nothing when the compressed air and gas motor are not in use, except the housing of the vehicle.

"The motor for the production of power is a multiple (two, four or more) cylinder reciprocating engine, compressing air, heating and using the same expansively simultaneously, with a spray of petroleum ether explosively.

"The size of the motor upon each vehicle must be regulated by the weight of the vehicle, its load, the grade required to be climbed, and the speed at which it is desired to run the car. The engine is entirely under the control of the motorman, who can instantly change the speed from that of the walk of a horse to his fastest trot. By means of an emergency track brake in combination with the wheel brake, the momentum of the vehicle can be almost instantly arrested by raising the vehicle and wheels bodily from the track. The air-gas motor car, it is claimed, will take any grade or curve at an equal speed that a cable or trolley car can develop.

"The gas to supply the motor can be produced from any of the commercial spirits, high wines or ethers, such as fusil oil, alcohol, wood alcohol, gasoline, naphtha, benzine, kerosene. The three latter may be preferred, as they are so cheap. Three-quarters of a pint of the commonest grade of naphtha, or benzine, costing from 25 cents to \$1 per fifty-gallon barrel in bulk, will produce one horse-power for ten consecutive hours.

"The gas is produced automatically for each succeeding stroke of the air-gas motor, the uniformity of speed which, regardless of load or grade, is regulated by an automatic gas governor, which controls the impulse of the motor even when the car is not en route."

The fluid from which the gas is produced is carried in strongly riveted, brazed, copper tanks, of from five to ten gallons' capacity, containing a sufficient supply for a day's use. One of the strongest inducements held out to railroad magnates to get them to buy the new motor is that with them in use the cost is from one-third to one-half less than by any other system of propulsion, and that there is no possibility of runaways or cables, and other dangers incidental to both cable and horse car lines. The new motor is entirely incased, and unaffected by dust, mud or rain, or by heat, cold, snow or slush.

Any street-car body may be placed on a Plass air-gas motor truck until the bodies now in use are worn out, when they can be replaced by new, modern car bodies especially adapted for the air-gas motor. The material used to produce the propelling power is nineteen parts of air and one of gas, which are automatically compressed and exploded by a spark of electricity, at a minimum rate of ten impulses to the second, producing 600 revolutions to the motor shaft at

any speed, of from one to twenty miles per hour, at which it is desired. The motor does not require a fixed street gas to be manufactured, in permanent gas works, and compressed and stored in heavy tanks, containing from thirty to forty cubic feet of gas concealed beneath the seats of a car, or the compression at a central station of compressed air, and carrying the same in cylinders on a car, necessitating for either purpose the side track of the car after its trip to recharge the storage cylinders with compressed air or gas. The material used by the air gas motor is essentially compressed air, with a minimum quantity of petroleum, either mixed with the same only as fast as it can be used, each cylinder requiring to be free from the preceding charge before the succeeding one can be produced.

Over 95 per cent. of the energy produced by the motor is supplied directly for the propulsion and manipulation of the car, without any other losses incidental to coal, ashes, exhaust steam, electricity, and to the immense weight of a cable.

Another advantage claimed for the new engine by its inventor is that in time of riot, strikes, or other disorders, malicious or mischievous persons could not obstruct the cars by tampering with the sources of supply or conductor of the propelling power. With it in use there can be no destruction of water or gas mains and pipes by electricity, which is now much complained of in various parts of the country.—*New York Journal*.

American Anvil Manufacture.

THE extent of the anvil trade in this country and the method of manufacture are probably not generally known. Previous to 1891 the wrought iron anvils used in the United States were imported from England, Germany and Sweden. For the 10 years preceding 1892 the average importation per year was 830 tons. The highest record was 959 tons in 1888. Several attempts to manufacture anvils in this country are on record, but the real birth of this industry, now so firmly established, dates from 1891. Its growth in 1892 and a part of 1893 was rapid. In 1894 the importations were only 380 tons, and in 1895 estimated at 500 tons, while the consumption for each of these years averaged about 800 tons. This shows a satisfactory progress for the American manufacturers. It is judged that the consumption for the present year will reach at least 800 tons, and it is believed that 600 tons of this amount will be produced at home.

Reference is had in the above to wrought anvils only. Cast iron anvils with steel faces have been successfully manufactured in this country for many years. Their quality is excellent, and they answer well for many purposes. Formerly wrought iron anvils were built up of six pieces welded to a central core—four corner pieces, the heel piece and the horn piece. These six pieces were welded to the core, and the whole then hammered and shaped. The steel face was then welded on, and tempered and ground. This method was generally pursued in the manufacture of foreign anvils, but more recently improvements have been adopted, so that a less number of pieces enter into their construction.

American manufacturers have discarded the old-world methods entirely. For illustration we refer to the methods used by the manufacturers of the anvil known as the "U. S." With improved furnaces for heating the blooms, ponderous steam hammers for forging, steel dies for shaping the heel and horn, new processes for tempering and grinding, novel appliances for swinging the anvil as required in the course of construction, they produce a superior article. In the manufacture of the "U. S." anvil the material is selected and piled to form a bloom of sufficient size to produce the entire upper half, including the heel and horn, and a separate one to form the entire lower half. These piles are run into a furnace, and when heated to the proper degree become blooms, which are brought under a steam hammer and each shaped and punched and then welded in the centre. Next the steel face is welded on, only special American crucible cast steel being used, and the anvil is swung to another hammer for the finishing strokes. Then follows the tempering of the face by a process, originating in this plant, which insures even and perfect results, with a great saving of time in handling. After this come the testing, inspection, japanning, labelling and bagging, and a warranted anvil is ready for the market.—*The American Manufacturer*.

—The Carnegie Company has just secured a good paying contract for 10,000 tons of steel rails for Japan. In the getting of the contract the competition of all makers had to be considered, but American manufacturers who seek a foreign market for their product generally win.

American Tools in England.

THE *Ironmonger*, of London, publishes a letter from an English retail hardware merchant telling one of the most important secrets as to why American tools sell so well in England: "The American manufacturers keep large stocks in London and fill orders with great promptness. American catalogues and price lists give full information regarding sizes and grades, and they promise delivery in three days from London." He says that "the Sheffield price list requires long study to comprehend it, and when an order is sent to Sheffield it may not be filled for four weeks, or even eight weeks." This tardiness in filling orders, he claims, has been a matter of weekly experience for the last 20 years. American files are not only promptly delivered, but this retailer says that his customers prefer them, and for some reason 90 per cent. of all the files he sells are of American manufacture, but he believes that if the Sheffield makers would fill orders promptly he could sell a good many more files made at home.

The London *Engineer* notes the growing favor in which American files and rasps are held in England. The American goods are depreciated in some quarters, some saying that they are not made of as good a quality of steel as the English, claiming that a good Sheffield rasp is worth the additional money it costs because of the actual bar of steel of which it is made, but consumers are not all convinced by this argument, and go on buying the cheaper wares.

A manufacturer of hand-cut files candidly admits that "the quality and life of the hand-cut and machine-cut file is so slight that people who have been using machine-cut files will continue to do so." The American files are machine cut.

Referring to another article of steel manufacture, the *Engineer* says: "An important branch of the scissors trade is the large shears used by tailors for cutting out. It is somewhat remarkable that the Americans are almost completely commanding this market. A practical tailor states that the reason is not far to seek. The English maker does not study the requirements of the cutter as the American does. Of course there are several who prefer the Sheffield-made shears, but in nearly all the large tailoring establishments the American shear is in use."

Electric Motors in Shop Work.

THE employment of electric motors, so arranged that they may be readily moved from point to point in the shop, as occasion may demand their services, is spreading with considerable rapidity both in Europe and in America. By this method the power is conveyed without trouble to any desired locality, the necessary connections are quickly made, and the results are eminently satisfactory in every respect. In a recent American installation the motor is used in this way in an establishment engaged in the building of heavy special and standard tools. The main shop is about 500 feet long by 70 feet wide, and at each side, extending the entire length, is a bay about 25 feet wide. The entire length of the central portion of the building is traversed by electric cranes. The electric conductors feeding the crane motors are tapped at the columns, where the necessary connecting devices are put in. Four portable electric motors, ranging from two to eight horse-power, are in use. The smallest is arranged for drilling and tapping, and is provided with all the attachments needed for securing it in working position on the piece to be drilled. This motor can be carried about the shop by hand. The large motors are mounted upon heavy bases, and are geared down so as to drive a pulley at the speed of the main driving shaft. They also have, in the upper part of their frame, rings by means of which they may be lifted and moved by the travelling cranes as required. The motors are self-contained machines in every respect, and are furnished with all the electrical devices necessary for their control and operation. The convenience of this equipment and the ease and rapidity with which the motors can be moved and connected for working can be best illustrated by the statement that in one day one of the large motors can be, and has been, used on three different machines in as many different locations. The time required to move and set up a motor is a very unimportant item in comparison with the advantages arising from its use in this way.

Superiority of American Hardware Novelties.

AMERICAN tools and implements are growing in favor amongst the conservative English. Hardware novelties, housefurnishing goods, farming implements, etc., are gaining strong foothold. They are well displayed and extensively advertised. Carpet sweepers were prominent everywhere, not alone in the windows of city shops, but also in those sleepy little ones in the quiet little towns we passed through. It showed how wide awake the merchants were, in at least one instance, in appreciating Yankee brains and enterprise. At many places in the English Lake region were seen American haying tools used side by side with those of Sheffield make, and what a contrast! With but little difference in price, the former were, without exception, better finished, lighter, stronger, and in every way better made than the English goods. At Penrith was seen quite a display of hayforks, part home product and part of American manufacture. The shopkeeper, in speaking of the latter, said that, from their great excellence, they were selling even better than the English. Such an admission of Yankee superiority from a conservative Englishman means much, and is prophetic of future business. While from the standpoint of durability no better, perhaps, still, finish and everything considered, the American article is usually superior. That, with equal price, ordinarily will insure sale once the inbred conservatism of John Bull is overcome, the greatest difficulty foreign manufacturers have to encounter.—*Iron Age*.

The Biggest Metal Span Yet.

A BRIDGE is to be built across the Niagara gorge near Niagara Falls and will be a most remarkable one in several ways. It will have a span, says the *Railroad Gazette*, between centres of end pins of 840 feet, and a rise of 150 feet from the level of the pins at the skewbacks to the centre of the ribs at the crown of the arch, which point will be 170 feet above low water. The bridge will carry one floor, 46 feet wide, which will be divided so as to accommodate two trolley car tracks, two carriage roadways and two sidewalks. This will be much the largest arch span in the world. The principal existing arches are as below:

	Rise.	Fall.
Luis I., Oporto, Portugal.....	566	146
Garabit, France.....	542	170
Pia Maria, Portugal.....	525	121
Eads St. Louis Bridge.....	520	47
Washington Bridge, New York.....	510	91.7
Paderno, Italy.....	492	123
Rochester Driving Park.....	428	67

The arch will be built out from either end, without false works, as a matter of course, as false works would be quite impossible in the Niagara gorge. The anchor pits for the anchorage to be used during construction are now being made.

The suspension bridge now used for highway and footpath will be kept in service until the new arch is ready for use. The grade of the new bridge will be about a foot higher than that of the old bridge at the American end, the grades being the same at the Canada end. The centre lines of the two bridges do not coincide, being on the American side about 13 feet 9 inches apart and meeting on the Canadian side.

Shipping Iron to England.

DISPATCHES from London say that a prominent firm in the English iron trade "has made extensive purchases of pig iron in Alabama and is arranging for further purchases." This transaction causes the leading English trade journal of the iron industry to say that "England is threatened with an invasion of American pig iron," and that "this is one of the most serious blows to the supremacy of Great Britain as a manufacturing nation." One year ago the producers of pig iron in Alabama were expecting that export shipments would soon be made, and some steps were taken toward the establishment of agencies at several European ports. At that time the price of foundry iron in Alabama was much lower than the price of similar grades in England. In the months immediately following, however, the expanding demand here and the advance of prices diverted attention from attempts to create an export trade, and, we think, made it impracticable to sell Southern pig iron abroad at a profit. Prices here have fallen again, and it is now stated in London that export sales have been made.

The cost of making pig iron is lower in Alabama and Tennessee than in any other part of the world, and eventually Europe will obtain part of its supply from that region. At one time last year the price of Bessemer pig iron in the Pittsburg district was no higher than the price of similar iron in England. The full utilization, under conditions of ordinary competition, of the enormous deposits of ore recently discovered in the Mesaba district would largely reduce the cost of making Bessemer iron in this country. If the Southern iron masters can sell iron in England, they will not be able to make a respectable argument hereafter in support of a tariff duty to protect them against the sale of English pig iron of the same grade here in their home market.—*New York Times*.

Shears Driven by Electricity.

ONE of the heaviest machine tools in the works of the Granite City Steel Company, at Granite City, Ill., is an immense pair of shears driven by direct-connected electric motors. The shears weigh between 90,000 and 95,000 pounds, with motor, and were built expressly for this plant. The machine is designed to cut up steel billets $4\frac{1}{2}$ inches square, and round bars of a section equal to that of railway axles. The knives on this machine are 18 inches long, 7 inches deep and $2\frac{1}{2}$ inches thick. The bed, according to the description handed us, weighs 44,000 pounds, and its great weight enables the powerful shock due to heavy cutting to be absorbed by the inertia of its mass. The main pin or hinge about which the movable jaw rocks is a low phosphorus steel forging eight inches in diameter, and is kept from turning in its bearings by a long feather or key.

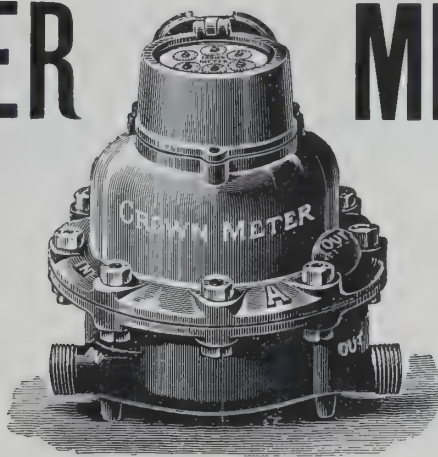
The lever, the movable blade of the tool, is 14 inches thick where the knife is attached, this unusual thickness being provided to resist the heavy cross-strain produced by dull knives. The electric motor makes but 500 revolutions a minute at regular speed, and is controlled by a specially designed rheostat, so that the start may be made very slowly, an important matter on account of the great power required to start the heavy fly-wheel and the gearing by which the lever is moved.

—The Stewart Heater Company, Buffalo, N. Y., U. S. A., have gotten out a new catalogue describing their tubular sectional and open feed water heaters and purifiers, also the Otis double system or combination water heater with automatic regulator. The catalogue is printed in colors and is very finely illustrated. A detailed cut is used in connection with each description of the different heaters which they make. Some very flattering testimonials are also printed, together with a list of users.

CROWN, NASH, : GEM : AND : EMPIRE WATER METERS.

158,000

In Actual Service at the Present Time.



158,000

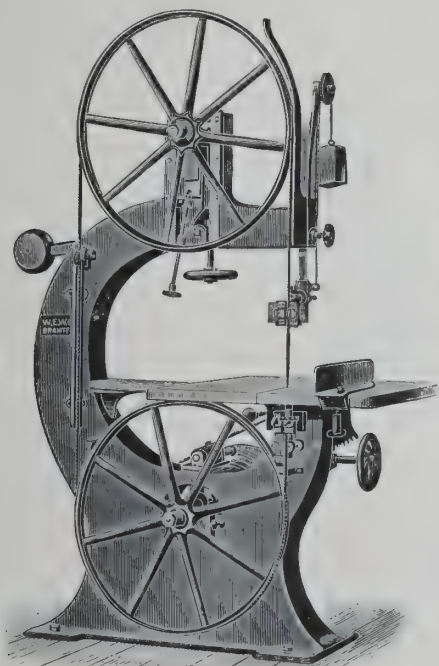
In Actual Service at the Present Time.

YEARS OF EXHAUSTIVE SERVICE IN ALL SECTIONS OF THE GLOBE HAVE DEMONSTRATED THE
ACKNOWLEDGED SUPERIORITY OF OUR METERS.

NATIONAL METER COMPANY,

APRIL, 1896.

298 Broadway, New York, U. S. A.



No. 3.—36-inch Wheel. Weight, 2,000 lbs.

BAND RE-SAWS.

No. 5 Band Resaw.—48-inch wheels; saws 24 inches wide, 5 to 40 feet per minute. Resaw swings clear of machine when required. Weight, 4,500 lbs.

No. 6 Band Resaw.—48-inch wheels; takes saws to 3 inches; cuts 30 inches deep. Weight, 4,300 lbs.

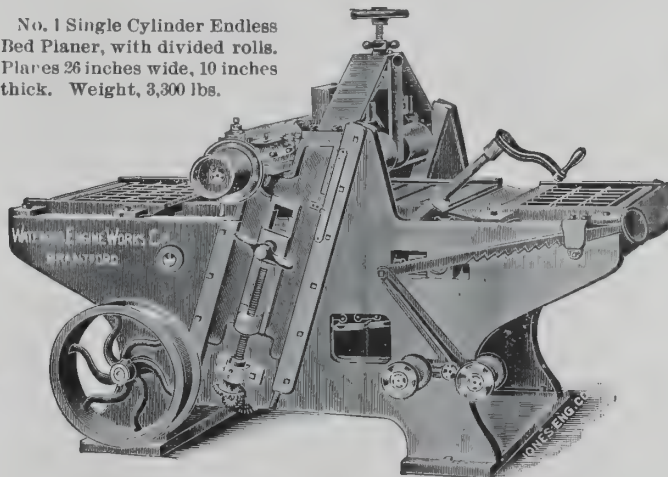
No. 7 Band Resaw.—54-inch wheels; 4-inch saws; cuts 30 inches deep and to center of 10 inches. Weight, 5,300 lbs.

OTHER SIZES MANUFACTURED.

FULL LINE OF

Saw Mill Machinery.

No. 1 Single Cylinder Endless
Bed Planer, with divided rolls.
Planes 26 inches wide, 10 inches
thick. Weight, 3,300 lbs.

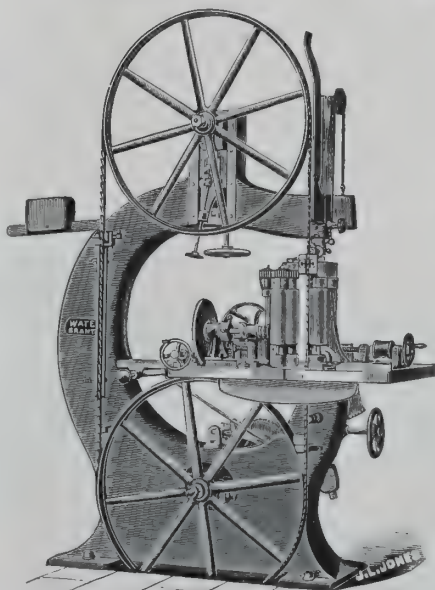


Wood-Working MACHINERY.

No. 1 E. B. Planer. Weight, 3,300 lbs.; like cut.
No. 1 Double Cylinder E. B. Planer. Weight, 5,300 lbs.
No. 2 E. B. Planer. Weight, 2,600 lbs.
"Champion" Combined Planer, Matcher and Moulder.
Planes 24 inches wide up to 6 inches thick. Best
all-around machine.

MANY OTHER STYLES AND SIZES,
AND FULL LINE OF
WOOD-WORKING MACHINES.

Long experience in the export trade is
a satisfactory guarantee.



No. 4.—40-inch Wheels and Removable Resaw.
Weight, 2,750 lbs.



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NEW
PREMISES.

1896.

January, 1896, we moved into new premises, securing unsurpassed facilities for
executing contracts promptly and satisfactorily.
Order direct or through your commission house, sending us copy of order.

Saw Mill Machinery Our Specialty.

There are some 300 of our saw mills running in South and Central America,
Europe, Asia and Africa, of different sizes, from those cutting logs 6 feet in diam-
eter to small mills sufficiently portable for mule-back transport.

WATEROUS, BRANTFORD, CANADA.

Too Much in Favor of America.

INTELLIGENCE of South Africa received at New York dwelt upon a fresh outbreak of opposition in London to the alleged Americanizing of the Rand—as the great mining ridge is called—by the wealthy mine owners, who, it is said, have been placing orders for machinery in the United States instead of in England. It was said further in the news dispatches that directors of the English machinery companies were also directors in the American companies.

The news draws attention to the very intimate relations that have existed for the last half dozen years between the United States and the African continent in a business way, relations which came into being naturally, but were unobserved by the mercantile communities of the world generally, until it was found that the Yankees had a practical monopoly of important branches of trade in the rich and growing countries down there.

Until about the year 1890, it is said, not much business was done by American manufacturers or other makers of mining machinery with South Africa. Then, however, mining on a large scale, or on the "American plan," as it has been called, began. Instead of small work or placer mining, wealthy men and syndicates put up sufficient capital to open and equip a mine and work it on the principles of a big business enterprise from the start.

While mining in all localities begins with surface work, here in America there had been so much of it, of almost all kinds, for years, that conditions had changed until the big mine owners, when they decided to open a mine, immediately capitalized the company so that it could begin business with all facilities and without debt.

When mining took a spurt in Africa, about six years ago, the men interested determined to work in the way which had been in vogue in this country with so notable success. The English capital, which in many cases was the strength of the enterprise, employed American skill and experience. Most of the engineers in the new country were and are Americans or Britishers, who, as agents of home capital, had got their mining experience in this country, and consequently were Americanized in habit. These men were familiar with American machinery, and naturally, in ordering, ordered what they knew about. American mining machinery and apparatus were and are, moreover, at the head of the list. In no other country had machinists and engineers the opportunities for development during 25 years that had been offered in the United States and South America.

Elsewhere, for instance, for a particular mine, perhaps, a drill or some mechanism had been made and found to work well, but when tried on another mine it would not answer satisfactorily. In America were almost all kinds of mines, and American manufacturers were in immediate intercourse with the mines, not separated by oceans, so that they were able to see the needs of the miners and the operations of the various implements. Besides this there was, of course, a powerful factor, the intense Yankee desire to be abreast and ahead of the times in all things and the Yankee pre-eminence in mechanical invention.

The rock drill is an American invention, and it was most necessary to Africa where most of the mining is at deep levels, in hard rock.

So American manufacturers received the orders for the mining machinery, and great quantities of it were shipped. It used all to go via London, that is to say, by way of English ports, for there were no ships sailing from here to the African mines. For the last three years, however, the business from this port has increased so that now one steamer and sometimes two a month sail direct for Africa; incidentally it may be said that to-day they carry about everything that is made in the United States, so varied is the market there for our goods.

The word that the outcry is against the "Americanizing" (active) of the Rand is hardly correct, manufacturers say, in so far as regards the big business over there, America having had it from the start. Small work, of course, was done before that, and purchases were made elsewhere, but when the big work began it was done, as a matter of course, with the machinery of the people who had shown what could be done on a large scale.

Within two years, however, so many eyes have been turned on Africa that there has been a good deal of competition. The English and Germans and other nations have sought to sell there, and while it is said that all of the big plants are American machinery, it is admitted that for the last 18 months there has been more of a division of business. In some lines the English not only equal the Americans, but sell more of their manufactures than Americans do of ours.

In a general way it may be said that for the specific mining machinery, Africa comes to America, while for her general machinery England is called on. For instance, although the rock drills are American, wherever there is a rock drill there is a boiler, and the boiler usually comes from England.

Another American specialty is the air compressor, and most of those are supplied by the United States. Although pipe is a common product of all countries, and England makes good pipe, for the past couple of years American pipe has been the accepted standard. One maker said he thought that in the pipe market we merely undersold Great Britain in a good article.

One said: "It isn't that England is not getting her share; she wants everything. She even wanted the country, and tried to steal it. Since there has been so much war talk down there business has been practically killed."

In the aggregate of dollars, Secretary W. L. Saunders, of the Ingersoll-Sergeant Drill Company, which has a London house, said he thought that England and America did about the same amount of business with the African mining interests.

This company and the Rand Drill Company and the Frazer-Chalmers Company, makers of mining machinery, are among the large firms in the business in this country. The Frazer-Chalmers Company was a large Chicago concern, and it is said was bought out by English interests, which have now built extensive factories in England near the mouth of the Thames. It is conjectured that the

reference in the cable to English directors in American companies may have reference to this house.

There have been some large shipments of pipe lately from here to the mining country, one firm having sent out eight miles of pipe.

Another transaction of recent date, which serves to indicate the magnitude of the business relations between the countries, required the expenditure of \$1,000 in cable tolls between New York and Johannesburg. The purchase, mainly of electrical supplies, amounting to \$175,000. It came about through a man formerly connected with the General Electric Company here who now is engaged in an undertaking over there.—*News, Providence.*

Japs Studying Our War Ships.

AMERICAN shipbuilders will be interested in knowing that the Japanese Government has requested the loan of the models of the first class battleship Indiana and the armored cruiser New York, for the purpose of studying them and comparing them with the prevalent types of European warships. The result of this object lesson in American naval construction should be an order for several large armor-clads to be built in the shipyards of the United States.

A start once made in this direction will, without a doubt, have a beneficial effect on this feature of American industry. In fact it may be confidently expected that shipbuilding will yet become a leading American industry.

The progressive Japanese possess establishments of their own capable of turning out fine, fast unarmored cruisers. But they have no plants adequate to the task of building and constructing first class armored vessels, either of the battleship or cruiser class. A large number of these ships will be required for the powerful navy that these Yankees of the Orient propose to create, and there is no country in the world that can construct better floating forts than our own, while the expense of battleship construction has decreased about 30 per cent. in the past five years.

Chinese Railroad Deal.

A GREAT railway deal has been completed by M. R. Jefferds, civil engineer, of New York. He has secured the contract for building the trunk railway from Hankow to Peking, a distance of more than eight hundred miles, allowing for the necessary detours. Mr. Jefferds, who represents a strong American and English syndicate, has guaranteed to raise ten out of the thirty millions of taels required for the work, which is to be done by a joint stock company, at the head of which is the Tao-tai Hsu-yin-Tsiang, who was deputed by their Imperial Highnesses Princes Kung and Ching, to organize and carry out the undertaking.

It is understood that beyond giving the concessions to Hsu, the government will have nothing to do with the railway, which is to be a purely commercial affair. Hsu is a Cantonese of high standing. His elder brother is Superintendent of the Imperial Granaries, in Peking, and was lately vice-president of the Board of Revenue. The news that Mr. Jefferds has won in this gigantic deal has created excitement among the many railroad contractors who have been working hard to get into the scheme.

New Motor Carriage.

CHAS. B. KING, of Detroit, Mich., U. S. A., has constructed a horseless carriage. It was exhibited in the streets of Detroit for the first time March 6th. It consists of a four-cylindrical engine, the connecting rods of which drive a shaft, at which at the opposite ends are respectively the fly wheel and the belt wheel. The belt wheel connects by a belt with a drum situated just back of the driver's seat and half under the bottom of the vehicle. Inside the drum is arranged an equalizing gearing, that when turning corners equal power shall be given to each set of wheels, but allowing the wheels on one side to run as much faster than the other as the curve requires. The fuel—gasoline—is ignited from a storage battery copper wire, and over the cylinders is a water tank for the purpose of cooling the cylinders. When in motion the connecting rods fly like lightning, and the machine is capable of running seven or eight miles an hour. The carriage is about three horse-power, and the whole weighs about 1,300 pounds. Mr. King will sell his first carriage and construct another, which will be of five horse-power, more simple in construction and lighter.

THE use of kerosene oil in cleaning boilers is nothing new to American engineers, for the best of them have been using it for years. The principal trouble heretofore has been the inability to get it into the boilers in quantities sufficiently minute to accomplish the desired results. Kerosene oil keeps boilers clean by preventing cohesion of mineral matter contained in the water. Each particle of such matter as it separates from the water is surrounded by a globule of kerosene and thus held in suspension. The oil thus attaches itself to any scale that may be baked on the iron and so softens it that the boiling of the water washes it into suspension again. So long as these mineral particles in suspension are surrounded by oil their cohesion, and also their adhesion, to the iron is prevented. The latest injector for feeding kerosene to boilers is advertised for the first time on another page of this journal.

—McIntosh, Seymour & Co., Auburn, N. Y., U. S. A., are building a 700 horse-power three-cylinder, three-crank vertical engine to be direct coupled to two 200 K W dynamos, for shipment to Buenos Ayres, Argentine Republic.

35% MORE BUSINESS IN 1895
THAN EVER BEFORE.

DO YOU WANT A
BETTER RECOMMENDATION?

IF SO,
TRY OUR FILES.
THEY ARE THE BEST.

ALL KINDS OF FILES AND RASPS FOR ALL KINDS OF WORK.

NICHOLSON FILE CO.

PROVIDENCE, R. I. U. S. A.

SEND FOR CATALOGUE.
450 ILLUSTRATIONS.

FOREIGN TRADE
RECEIVES SPECIAL
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DISCOUNTS QUOTED
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SOLID BRAIDED CORDAGE.

Sash Cord,
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SEND FOR SAMPLES.

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SAMSON BRAND.

SAMSON CORDAGE WORKS, - - Boston, Mass., U. S. A.



McCAMMON PIANO CO., Oneonta, N. Y., U. S. A.

Write for
Catalogue and
Prices.

TUCKER'S ALARM MONEY DRAWER.

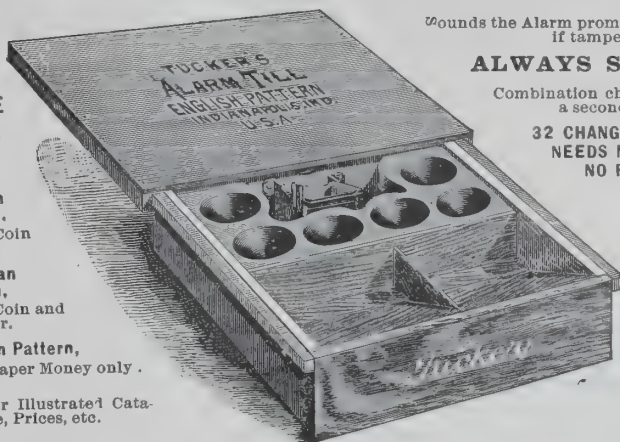
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THREE
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English
Pattern.
For Coin
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For Coin and
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Sounds the Alarm promptly
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32 CHANGES
NEEDS NO KEY.
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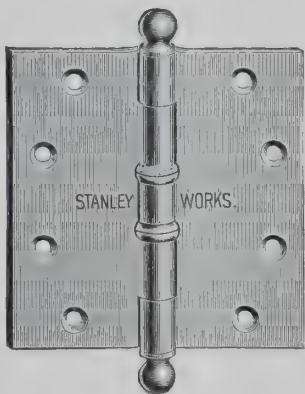
Carefully packed & dor. in a
strong moisture proof box.
6 1/2 cubic ft. Weight 100 lbs.
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General Agents: JNO. H. GRAHAM & CO., Chambers Street, New York.
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Stanley's Ball-Bearing Steel Butts

BEST
BUTTS
IN THE
WORLD
FOR
HEAVY
DOORS.



SEND FOR PRICE LIST.

ADVANTAGES:
UNLIMITED
RESISTANCE
TO WEAR.
NOISELESS IN
OPERATION.
NO NECESSITY
FOR OILING.
LOW PRICE.

THE STANLEY WORKS, NEW BRITAIN, CONN., U. S. A.
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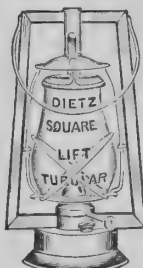
"Black Diamond" Files.



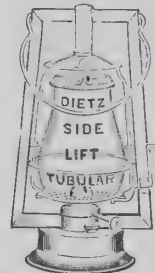
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21 to 43 Richmond St., Philadelphia, Pa., U. S. A.

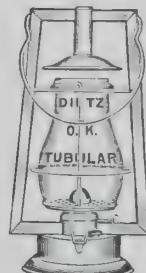
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SQUARE LIFT OR STAR.



SIDE LIFT OR VICTOR.



"O. K."

The above illustrations show three of our principal No. 0 Tin Tubular Lanterns. They are all well made of the best materials, with extra quality globes and burners. The oil founts are drawn from single sheets of tin, and afterward retinned. They are fitted with the latest and best devices for moving the globe out of the way for lighting and trimming.

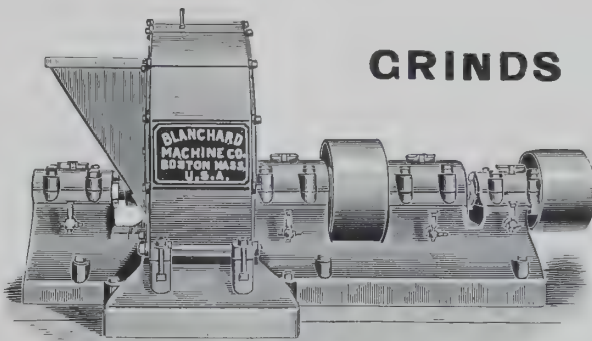
We offer all of these lanterns for EXPORT TRADE at \$7.50 per dozen, no charge for packages, f. o. b. vessel at port of New York, less 50 per cent. discount.

Send on a trial order through your commission man, sending duplicate at the same time to us.

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Send for catalogue (Spanish or English) and complete price list.

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GRINDS

Bones,
Tankage,
Fertilizers,
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and all similar
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DRY or DAMP.

Large capacity.
No skilled attendants
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SIMPLE. STRONG. COMPACT.

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Orders filled through commission houses.

Catalogue "B" on application.

BLANCHARD MACHINE CO., 303 Congress St., Boston, Mass., U. S. A.

Our Goods in England.

LONDON, March 23, 1896.

THE progress of American trade in the United Kingdom is one of the most significant facts in our commercial history. It is, of course, well known to most people that we purchase the bulk of our food products from America, and that we are practically dependent to a large extent upon that country for our supply of raw cotton wherewith to keep our textile factories at work turning the cotton into manufactures. But it is not so well known—at any rate in England—that we also purchase no inconsiderable quantity of American manufactured goods. England has forfeited the record of being the greatest pig-iron producer in the world, a position which has been held by the United States, while the latter country has a cheaper supply of fuel than we have in England. Before, however, mention is made of the iron and steel trades, it will be useful to show exactly how the export trade of manufactured articles to the United Kingdom stands at present, and that cannot be done in a more convincing and accurate manner than by giving a comparative table extending over a series of years. In this case I have extracted the facts from the monthly statistical returns made by the Washington Statistical Bureau and verified by the English Building Trade returns.

Article.	1888.	1895.
Agricultural implements.....	\$380,220	\$757,715
Books, maps, etc.....	683,253	812,826
Carriages, cars, etc.....	331,510	364,361
Cotton manufactures.....	1,181,349	953,976
Builders' hardware, tools, etc. (1889).....	506,530	857,417
Machinery, including steam engines and parts..	1,293,446	2,611,724
Sewing machines.....	687,582	848,069
Leather and manufactures (soles of boots).....	3,739,392	5,532,222
Tobacco manufactures.....	873,095	1,372,820
Wood manufactures, furniture, etc. (1889).....	1,528,388	2,070,000

The figures simply give the principal items of manufactured goods imported into the United Kingdom from the United States of America during the past seven years. In two cases (builders' hardware and wood manufactures) the figures are given for 1889, those for 1888 not being available. We see that our purchases of agricultural implements have doubled; a substantial increase is noted for hardware; machinery has more than doubled; leather manufactures (mainly soles for boots and shoes) have increased by nearly \$2,000,000, while considerable advances are noticeable for several other lines.

Now these figures indicate very surely that American-made goods are steadily gaining ground in this country. We are supposed to be great makers of farm tools, but yet American implements are sent here in increasing quantities. Only the other day I saw an expression of opinion from Mr. E. D. Warner, an American gentleman who had made a tour of England, and he found that American hardware, novelties, housefurnishing goods, farm tools, etc., are gaining a strong hold in this country. "In many places," he said, "we saw American haying tools used side by side with those of Sheffield make, and what a contrast! and with but little difference in price. The American were without exception better finished, lighter, stronger and in every way better made than the English." There is no reason why this trade should not be still further cultivated, more particularly in the tool branch of the trade, where American "handiness" gives the tool such a great advantage over the rival English article.

There is also a really good opening for more American hardware, which is always useful. American-made machinery is coming here in larger quantities every year, and is a result most satisfactory to American makers in the States. Machine tools are selling well in this country. Twenty years ago I don't think hardly as many people used American machine tools in England, but now they may be numbered by thousands, including some of the best experts at the technical schools and similar institutions. They are found to work better, in most cases, than the English tool, and to do exactly what is required. The British artisans are beginning to find this out and are relaxing their opposition to this class of tools, because they see that they can turn out more work by its aid; indeed, a good American tool increases a man's output by 20 per cent. One reason, also, why the export of American machinery has increased is due to the fact that a buyer can always be sure of getting prompt shipment; he has not to wait to have a machine made. Indeed, I believe it is not uncommon for shipment to be made within 48 hours of receiving a cable from Europe, and the goods delivered in England within eight or ten days of receipt of order. Unlike his American competitor, the English manufacturer does not keep a large stock, and thus too often has to delay prompt shipment. The interchangeability of parts of all machinery and their lightness and strength are all important factors in favor of our products.

The factory system of the United States maker is also superior to that adopted in Europe. The former manufacturer has a really good plant; he shows his confidence in his industry by sinking large sums of money in perfecting his machinery; has the latest appliances and the highest skilled labor. His object is to turn out the best article of his kind. The European manufacturer shrinks from putting much cash into his business and generally invests it in foreign enterprises. His object is to jog along, making a living, and not to trouble much about the excellence of his goods so long as they sell. He says that what was done for his father and grandfather will no doubt do for the next generation. Well, we are now beginning to experience the practical result of this theory. Our own Under Foreign Secretary of State has just told us that England no longer enjoys a monopoly of the principal markets of the world. That idea has quite broken down. An eminent scientist (Professor Armstrong) recently stated that we must expect to meet American competition more and more, and that was the competitor we had to fear most of all in the foreign trade as well as at home.—*Merchant in Public Ledger, Philadelphia.*

We Make Artificial Limbs for the Rest of the World.

"DID you know that a surprisingly large percentage of persons all over the world are walking on American feet? There were five at least sent from this city yesterday." It was an old soldier speaking to a reporter. Although he walked with a little stiffness, no one would have suspected that he had lost a leg in the service of the United States.

"It is the truth," he continued earnestly, "that a large proportion of the artificial legs with which unfortunates like myself are managing to get along very comfortably are made in the United States. The matter is naturally of considerable interest to me, and I have made quite a study of it. Growsome subject? Not a bit of it. You have never thought there was anything growsome about old Peter Stuyvesant when you have seen him in pictures and statuary, and even on souvenir spoons, his peg leg always the most conspicuous feature. It is those old peg legs from which we of a later generation have been delivered, and, in a great part, through Yankee ingenuity. They have found traces of artificial legs way back in the B. C. period, but it is only within the last 20 years or so that we have had anything that could be used with any degree of comfort.

"My Uncle Nehemiah used to wear a wooden leg. That was long before I ever thought it would be my fate to wear one. I remember more about the leg than about Uncle Nehemiah. In fact, I think he had left this world before I was old enough to know much about him, but he had left his wooden leg behind, and it was a never-failing source of fun for us boys. Such things were made with strong springs then. As the wearer stumped around with it the spring would work each time the leg was raised, throwing the foot one step forward. It made a good playing. We don't have such monstrosities now.

"The artificial limbs in this country have been, as I said, brought to such a state of perfection that they are sent all over the world. There is one establishment uptown where they have nearly the whole of one side of a large room covered with frames full of envelopes of letters they have received from customers in foreign countries. The collection is unique. The postmarks are often difficult to make out, but you can find envelopes from Budapest, Yokohama, and Auckland, New Zealand, Port Elizabeth, South Africa, Cape of Good Hope, Chili and Australia. A leg was sent to Japan last month to a Col. Soto, who had lost a leg in the Chinese-Japanese war. He sent to America through Count O. Kuma, Japanese nobleman and a customer of the same firm.

"Oh, yes, there is always a demand. There are more unfortunate persons in the world than you think, though they have not so much to complain of now. There are always more or less accidents. According to statistics, war claims the greatest number of victims; railroads come next, and then there are disease, runaways, firearms, cold weather, and any number of other things. The largest per cent. of those to whom accidents occur are men. Only 22 per cent. are women. Those narrow-toed shoes make a difference in the manufacture of American feet. The artificial foot is made for a pretty shoe, and the natural foot has to match it as best it can. Vanity? There's any amount of it.

"There is no attempt to make a natural flesh tint. When an artificial hand is used it is worn with a glove. If the tint could be made right in the first place exposure to the atmosphere would soon change it. Hands are not so much in demand anyway. They are often valuable to laborers, as a hook can be placed in the palm and used to carry heavy loads. An economical man has a hook that can be placed in the end of the artificial wrist, and he puts away his hand for Sunday wear.

"There are artificial fingers, too, that a musician can use, but they are comparatively expensive. These are of rubber and can be used very well for playing. One of the improvements is in using rubber. The feet are made of it, and they give with an elasticity that is more like the human foot than anything else can be.

"I have seen the picture of a man who could walk a tight rope with a wooden leg. He lost his natural leg by falling from a balloon onto a church steeple. I shouldn't advise every one to experiment with tight-rope walking, however.

"There was an eminent jurist, whose name is not unfamiliar to people around here, who, when he had had a drop too much of wine, was in the habit of unfastening his wooden leg and cudgelling every one within reach as heavily as he did his legal opponents with his wits in the courtroom on his sober days."—*New York Times.*

ACCORDING to an exchange from Australia, American bicycles are cutting a wide swath in that market, despite the fact that English wheels sell from \$15 to \$25 less. It is said that one Melbourne firm recently sent an order for \$50,000 worth of American wheels to a Chicago house.

A CABLEGRAM from Russia was received by the Shultz Belting Company, St. Louis, Mo., U. S. A., on February 20th, and called for 17,000 feet of Shultz belting, assorted sizes. In the same month an order was received from Sweden for 4,200 feet, assorted sizes. The foreign trade of this concern is very large, and includes distributing depots in London, Australia, Johannesburg, Brussels, Moscow and Malmo, Sweden. The strictly high-grade qualities of the Shultz belts, their lasting qualities and uniform standard of excellence, have made them justly famous in all parts of the world.

—The John Stephenson Company, Limited, of New York, is enjoying its usual large share of business, and the company's works are at present busy. Among their foreign orders the company is at work upon some electric cars for Rio Janeiro, Brazil, and some horse cars for Kimberley, South Africa.



Puritan Highest Grade Bicycles.

UNEQUALLED AND UNAPPROACHED IN
DESIGN, MATERIAL AND CONSTRUCTION.

Most Popular Wheel for Export.

LIGHT.

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DRY KALSOMINE AND FRESCO PAINT WORKS, 25 & 27 John Street, Brooklyn, N. Y., U. S. A.

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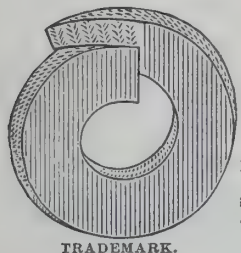
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Twist Drills made by this Company are **HOT FORGED** by an Entirely New Process.



They are **TOUGHER** and **STRONGER** than the **OLD STYLE** Milled Drills.

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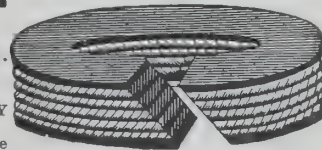
Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. **EVERY PACKING FULLY WARRANTED.**

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

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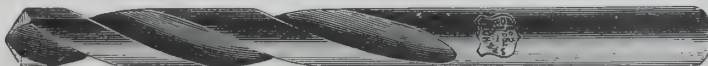


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INSTANTANEOUS, DOES NOT SQUEEZE OUT

and not necessary to follow up joint. We guarantee it to last for years on any and all pressures of steam, or any kind of joint where packing is required. **DOES NOT ROT, BURN, OR BLOW OUT,** therefore the **BEST FOR ALL PURPOSES.**

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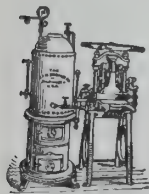
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Bernard's Patent Paragon Plier, Manufactured by The Wm. Schollhorn Co.,

9 inches long.

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THE BOSS TOOL FOR BUILDING WIRE FENCES.

This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

Manufacturers of the Celebrated "Star Brand" Shears and Scissors, and "Elm City" Shears in large variety.

BEST QUALITY ONLY.

Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

How to Ride a Bicycle.

BY E. L. BALD, EXPERT RIDER.

THERE has been a great deal of discussion of late on the part of medical men and women over the advantages and injuries to health that come from riding the bicycle. The "monkey hump," the "bicycle face," "bicycle insanity," injury to various physical organs from the jar of riding over rough roads or sitting upon improperly constructed saddles, and the thousand and one other evils, whether real or imaginary, have been harped upon through the press by these people. There are always cranks who are ready to attack any innovation that disturbs the routine of everyday life or jostles against their sensibilities, setting it down at once as a harmful and highly injurious practice. What I say upon this matter must be said from the standpoint of a layman who knows as much about the practice of medicine as an old cow does about knitting work. But from the standpoint of a bicycle rider of a good many years' experience, both of road and park riding and race track competition, I am ready to defend the practice. When I first began to ride, as a puny boy, it was merely for pleasure, but during a single year I gained so greatly in health and strength that I decided to enter race track competition, and almost continuously since I have followed the occupation of a racing man. During all that time my physical health has improved vastly, and I never experienced an hour's inconvenience or suffering as a result of bicycle riding.

If doctors generally, or even the large majority of them, were opposed to bicycle riding and could cite instances of injuries resulting from it, I would not expect that anything that I could say would be taken in rebuttal of such evidence. But they are not. In fact, I know of one physician who conducts a large sanitarium at Geneva, N. Y., where all sorts of nervous and chronic diseases are treated, who relies almost as much on the bicycle as upon his medicines and baths for the improvement of his patients. On any fine day his bicycle brigade may be seen pedalling about the streets of the village or the large park that fronts the institution, and he says that in many cases improvement dates from the day they begin to ride the wheel. And he is only one of the many doctors who will say the same thing. Several of the more prominent of the physicians of Syracuse, where I am now living, are ardent devotees of the wheel, and prescribe it for their patients, both male and female.

THE BICYCLE "FACE" AND "HUMP."

All the talk about the "face," the "hump" and the "mania" I am inclined from my own experience to set down as unworthy of consideration. They simply don't exist, except in cases of a few extremists or the minds of cranky doctors who never rode a bicycle. As far as my acquaintance among bicycle riders goes, the bicycle face is a healthy, happy face that looks as though its wearer was entirely capable of taking care of himself and enjoying life thoroughly. The "hump" has a little more tangible existence, for there are some riders who affect a scorching position whenever they ride, and do have the appearance of being deformed. The only "mania" that is very apparent among wheelmen is a great enthusiasm for the wheel, for which no one who is aware from experience of the pleasures of bicycle riding will blame them. All the talk about nervous tension and that sort of thing as a result of the continuous effort in keeping the wheel balanced and guiding it in and out among vehicles and pedestrians amounts to about as much as it would to talk about the nervous tension of walking along a crowded thoroughfare, maintaining equilibrium, and not running into other pedestrians. Learning to ride is like learning to walk. Once it is done no conscious effort is required to keep in an upright position and to keep the feet moving.

The editor of the *Journal* has asked me to write something about how the beginner should ride in order that he may get the most good out of his work in the way of improvement to his health. If anything that I can say will be of advantage or encouragement to the young rider, or to the old rider who has just become impressed with the delights of wheeling, I shall be very glad.

HOW THE YOUNG RIDER SHOULD BEGIN.

Assuming in the first place that you have purchased your wheel and had the saddle adjusted at the proper height, which is now done wherever wheels are sold, and that you have learned the art of mounting and maintaining your equilibrium in a riding academy under an instructor, or better still, in the hands of a friend upon the asphalt, you are ready to begin preparing yourself for the long rides that you probably intend to take later in the season. For the first week do not ride more than a mile or two, or perhaps three miles, morning and evening, say at 8 or 9 a. m. and 4 or 5 p. m. If you master the wheel readily you may be able to exceed this, but in no case ride long enough to get thoroughly tired out. The new rider tires before he realizes it, and great harm may be done by too severe exertion at this stage. Smooth roads should be chosen, where traffic is light. The green rider is liable to lose his head and get a spill on a crowded thoroughfare. Don't try any trick riding or hill climbing. You ought to be able to do five miles and return by the end of the week if the roads are entirely favorable and a good rest is taken before starting back.

DON'T RIDE TOO FAR.

Having reached this point, don't think at once that you can break records either for time or distance. I can think of nothing more ill advised than for a rider who has had experience of four or five miles of smooth pavements or level country roads setting out for a long, hard day's ride. By this I don't mean a century run, either. I have seen riders used up for the season by foolishly attempting too much while yet green and soft. Keep a check on your ambition at this time and don't overestimate your ability. Although riding your new wheel seems as easy as flying, remember that young birds have to learn to fly and that even carrier pigeons tire out. Turn back before you begin to feel

wearied, and don't, if you value your peace of mind, try to urge the pace for older riders. If you do you will find yourself used up almost before you know it, even if they do not try to have fun with you, which they would be eminently justified in doing, and set you a killing pace that you must keep or be left behind.

My advice to every road rider would be: Don't rush hills. It sounds very well to say that you have ridden over a rough and hilly course without dismounting, but it will have done you no good. If the hill is one that you cannot climb, going at an easy and natural gait, get off and walk. It will pay you in the end. It will save physical wear and tear that cannot be estimated and much strain upon your machine. It will also obviate much injurious effort of the heart. More injury to the vital organ may be caused in this way than by a hundred hot finishes on the racing track.

Above everything, when on long tours or short ones, be temperate. Avoid all stimulants, using water as your only beverage. Drink as little as possible. When thirsty, rinse your mouth well with water before swallowing any. You will be surprised how little will then be required to allay your thirst. When you get hungry stop and eat until you are satisfied, but do not start again inside of an hour or longer. An hour and a half is better. Let the same moderation and the good sense apply to your bicycle riding as to your other affairs, and it will not be more likely to harm you.

The most comfortable and undoubtedly the most healthful bicycle wear for male riders on long trips consists of a sweater, loose fitting bloomers and golf stockings. Personally, I prefer high shoes, but that is a matter of taste and individual choice.

All riders, male and female, will be wise not to be too much afraid of getting the "monkey hump." What I regard as the correct position on the wheel allows considerable weight to rest upon the handle bars. If you sit as straight as a ramrod your spine gets all the jar of the wheel, and your calves all the physical development that is gained. If part of the weight is thrown upon the arms, they, the muscles of the chest, and to a greater or less extent of the whole body, will be the gainer.—*The Journal, New York.*

American Commerce with Cuba.

THERE is a commercial side for the United States to the Cuban question.

The customs laws of Spain for Cuba are peculiarly hostile to the United States and were framed for the express purpose of compelling Cuba to confine her trade to Spanish manufacturers and producers. Before the year 1762 all the ports of Cuba were closed by Spain to the commerce of every nation but Spain, and the natives were prohibited from raising potatoes and wheat on the island. They had to buy these necessities from Spain. Famine was frequent on the island, and eventually, in 1818, the ports were opened to foreign trade, but under severe restrictions. In 1882 Spain reduced the tariffs on Spanish goods to nominal figures, and then enormously increased the rates on foreign importations, the highest rates being placed on American goods.

This difference in the tariff rates on Spanish and American importations is extraordinary, amounting in some cases to as high as 2,000 per cent. For example, 100 kilos of cashmere goods, if imported from Spain pay \$15.47 duty, and if from the United States they pay \$300 duty. England is a more favored nation. On all importations England pays less duty than the United States. And English goods are sent to Spain and shipped from there to Cuba, the Spaniard making his profits as a middleman. This profit is filched out of the pockets of the Cubans, who are also compelled to pay arbitrary prices for all their importations to enrich the merchants and producers in Spain.

The imports of Cuba from Spain will reach \$28,000,000 annually. It is estimated that if the importations were from the United States, at the same customs rates, the Cubans would save 20 per cent., or not far from \$4,000,000 annually. The profit to Spain's commerce from what Spain diverts from the United States alone, is about \$1,500,000 annually. Eighty per cent. of the products of Spain are exported to the United States, and Spain puts a direct tax on sugar and tobacco amounting to \$1,000,000 a year. The American consumer pays this tax. In short, the customs regulations of Spain for Cuba take from the United States about \$18,000,000 of trade, and costs it about \$2,500,000 annually. Cuban independence means the abolition of the discriminating duties and of the export tax, and an increase by about \$15,000,000 of American commerce with Cuba.—*Newark Advertiser, New Jersey.*

New Era of Steelmaking.

THE action of the Tennessee Coal, Iron and Railway Company, at their meeting in New York City, March 25th, in appointing a special committee to look after the erection of a steel plant in Birmingham, is the outcome of the discovery recently made by the company that low silicon iron is well suited for steel working by the open-hearth basic process and can be produced from ordinary red Alabama ores. Large orders for this iron, which is being made at the Alice furnaces in Birmingham, have been sold to the Carnegie Steel Company, of Pittsburgh, and the Illinois Steel Company, of Chicago, who have pronounced it perfect for the open-hearth basic steel process. A report upon these facts was made at the annual stockholders' meeting of the Tennessee Coal, Iron and Railway Company at Tracy City, Tenn., a few weeks ago, and the directors were ordered to take steps looking to the erection of a mammoth steel plant in the Birmingham district within the next six months.

—There are manufactured in the United States 8,000,000 kegs of nails in a year.



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Full directions, in various languages, accompany each bottle of our medicines.

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For the rapid cure of Diseases of the Throat and Lungs.

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For purifying the Blood and the cure of Scrofulous Diseases.

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Warranted to cure all Malarial Disorders.

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The most valuable Home Remedy for all Purgative Purposes.

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22½-Inch	80.00
25-Inch	110.00
30-Inch	175.00
32-Inch	200.00

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REMARKABLE FACT.

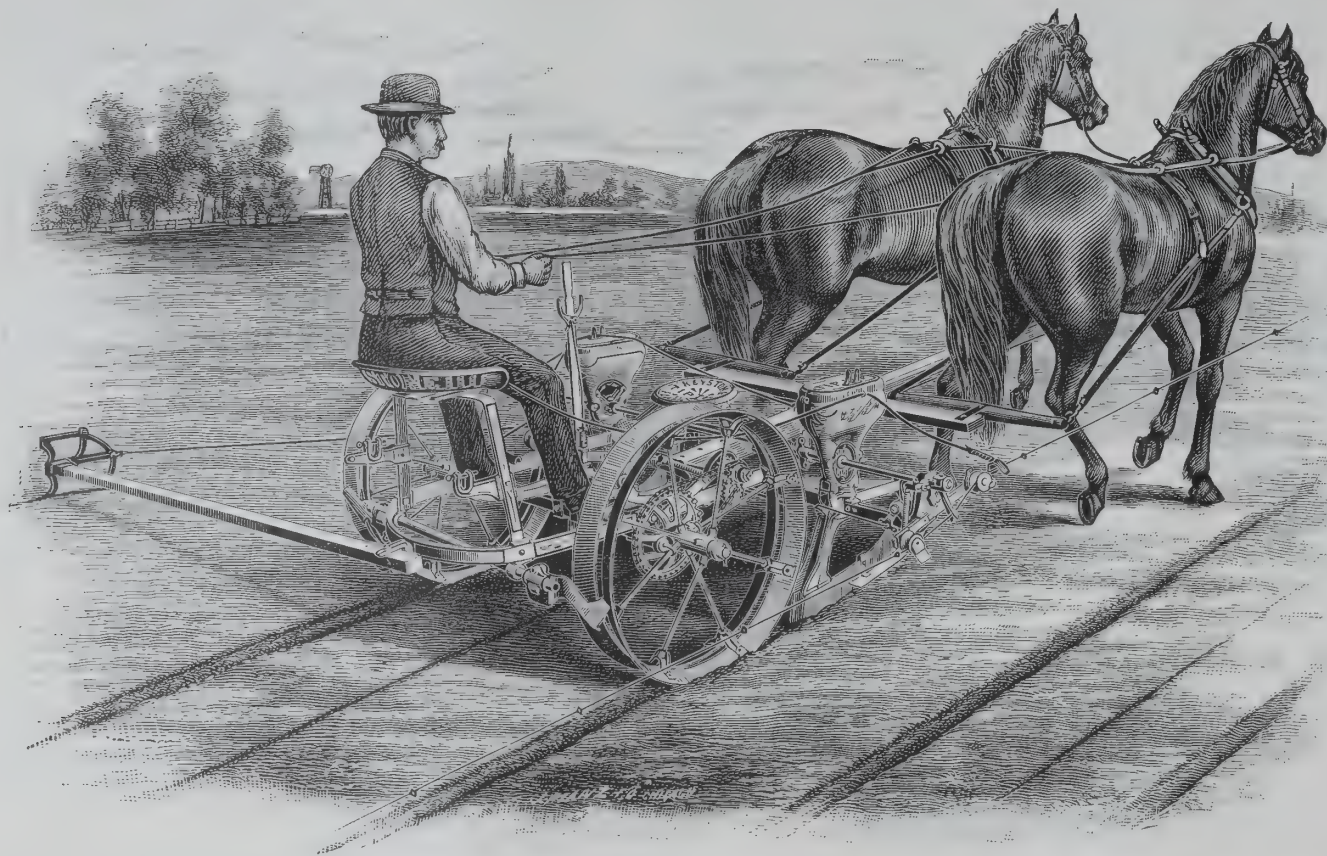
This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shya."



The above article, with a record of a quarter of a century's continued use and sale in the markets of the world, guarantees perfect satisfaction wherever used. The very highest grade of materials is used in its compounding. Price very low. Quality very high. Send for catalogue telling you more about it.



"Tip Top" Corn Planter.

PLANTS TWO ROWS
AT A TIME IN EITHER HILLS
OR DRILLS,
15 TO 20 ACRES PER DAY
OPENS THE FURROWS,
DROPS THE SEED,
COVERS AND ROLLS IT.
DOES IT ACCURATELY
IS STEEL AND IRON
IS NEAT, STRONG, DURABLE.

Our Line of Machines

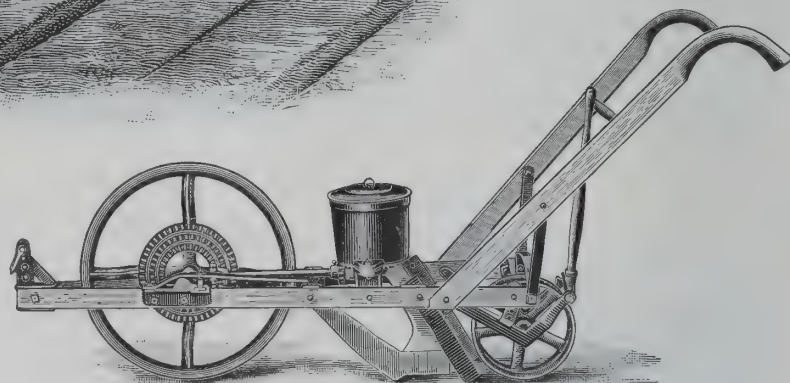
IS LARGE AND COMPRISES
THE LARGEST LINE OF CORN-
GROWERS' MACHINES MADE
BY ANY FIRM IN THE WORLD.

SEND FOR OUR CATALOGUES AND PRICE LIST.

KEYSTONE MANUFACTURING COMPANY

STERLING, ILLINOIS, U. S. A.

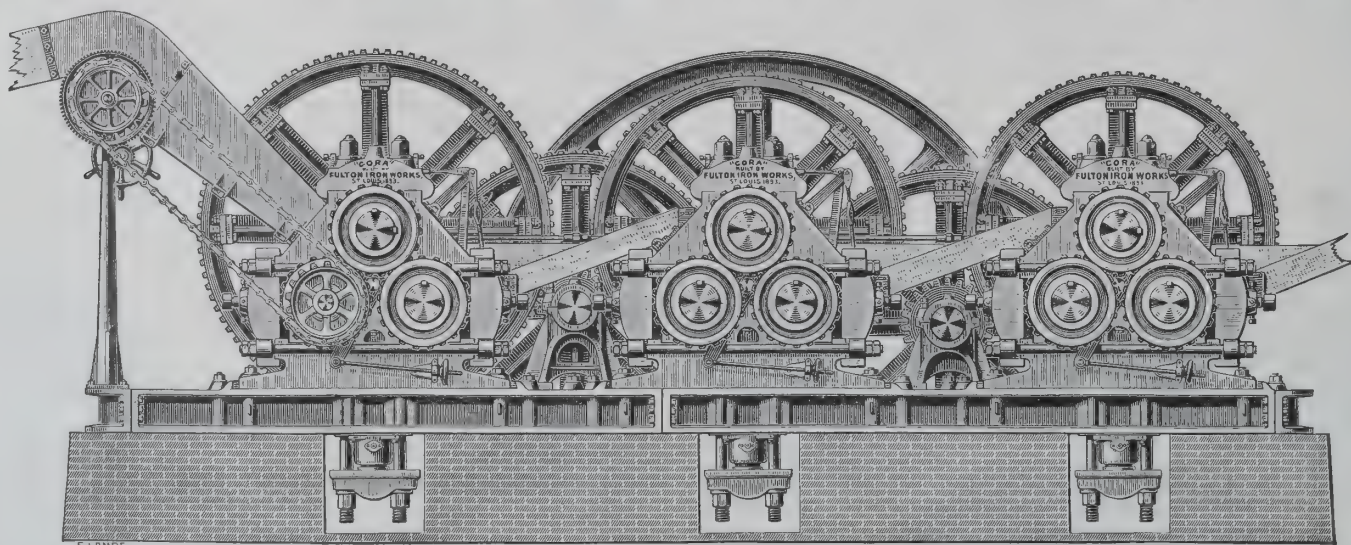
MENTION THIS PAPER.



ONE-HORSE DRILL FOR MANY KINDS OF SEED.

"CORA" Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by **"FULTON IRON WORKS,"** St. Louis, Mo., U. S. A.

Per S.S. "COPTIC"

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

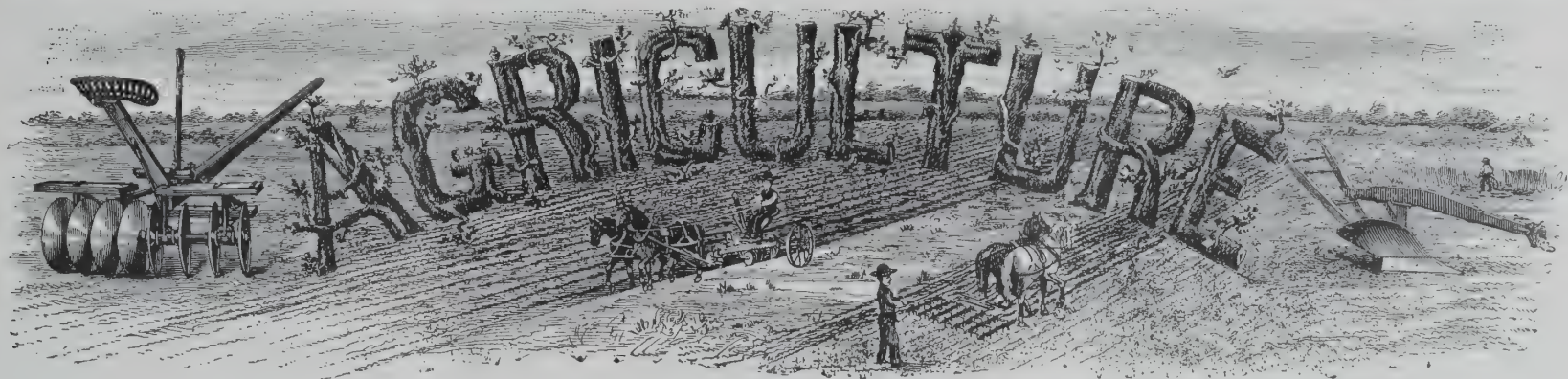
Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104 $\frac{3}{4}$; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

The Best Butter in the World.

MINNESOTA may now lay claim to being the centre of production of the best butter in the world. At the National Butter and Cheese Convention recently held at Cedar Rapids, Ia., the butter manufacturers of Minnesota carried away all the prizes. The sweepstakes prize was awarded to a dairy company at St. Paul, and as this prize is given to the exhibitor whose butter is considered better than all other samples in competition, it is considered the greatest victory ever won by any dairy company in the United States, and it will have the effect of winning for Minnesota butter a world-wide reputation, which no doubt will be worth millions of dollars to the State. There were more than 500 competitors, including the celebrated manufacturers of Elgin, Ill., and also the Darlington Creamery, of Philadelphia. The samples were numbered, did not bear the names of the makers, and the judges had no possible way of knowing to whom the various exhibits belonged.

The butter industry has gradually worked West. The centre of production of the best dairying products was first established in the United States in Orange County, N. Y. It then took a long jump westward to Delaware County, Ia., which for years maintained its prestige as a producer of the best butter. Elgin, Ill., then wrested the banner from Iowa, and now it has come to St. Paul, where it will undoubtedly remain for years, making Minnesota the representative dairying State of the Union, with a reputation superior to that of all other dairying districts on this continent.

American vs. French Peas.

FROM considerable inquiry among the leading Philadelphia wholesale grocers it would appear as if American peas had a good chance of eventually excluding the French variety from the American market entirely. They have already forced the lower grades practically out. A few years ago 100 cases of low-grade French peas were imported to every 25 of the high grade. At present the latter are the only ones in demand, and the low-grade foreign peas remain dead stock on the jobbers' shelves.

One cause for this movement is the short crop of French peas two years ago. This scarcity diverted the demand to America, and dealers and consumers who had sworn by the foreign goods before speedily discovered that the American were just as good and cheaper. A two-pound can of domestic peas can be secured for about the price commanded by the French variety.

The pure food law has had much to do with curtailing the demand for French peas in Pennsylvania and New Jersey and other States where such laws are in enforcement. The trade generally is fearful of handling goods which may be confiscated by the authorities as impure, and in the case of French peas their fears are well founded, as there is reason to believe that the Pure Food Commissioner will shortly take action against them.—*Grocery World*.

Washing and Pulping Coffee.

THE Honduras Planting and Trading Company, of Honduras, who own a large coffee plantation, report a new and successful process for washing and pulping coffee. Hitherto the coffee berries as soon as picked from the trees have been put into a pulping machine which has removed the greater part but not all of the pulp, and in this process the berries are liable to be damaged. The coffee in the parchment has then been allowed to ferment in a water tank and afterward put through a washing machine in order to wash off the glutinous matter. Mr. Albert E. Turner, the able manager of the company, decided that this process could be improved because the pulping was not done well. In fulfillment of his ideas the Fraser Manufacturing Company, of New York, made a combined pulper and washer for his company, and he takes considerable satisfaction in reporting to them the complete success of the machine and of the new process. As soon as the coffee berries are picked they are thrown into a water tank and allowed to ferment from three to four days. Then the water is drawn from the tank and the coffee is thrown into the Fraser Pulper and Washer and allowed to pass through the machine with a stream of water. The coffee in the parchment (pergamino) comes out white and clean, and completely separated from the pulp and jelly.

—The Reading Wood Pulley Company, Reading, Pa., U. S. A., has just completed a large order for England and another will soon follow.

American Carriages for Export.

TO the great majority of our readers it will occasion surprise to learn that carriages can be built in this country and shipped to Germany in "the white," that is, complete in the wood and iron work, ready for painting and trimming, and sold there in competition with vehicles of German manufacture, and yet this is a fact, and so large a number as 1,800 were sold last year by one dealer, and at the rate at which he is now ordering there is every likelihood of a much larger trade during the present year. Germany has always looked the least promising of the European markets for American manufactures. This is so, perhaps, in finished vehicles, owing to tariff rates, but not so with those in the wood and iron. The results of the trade for the last three or four years show that American methods have enabled us to furnish a more desirable vehicle at a lower cost than the German manufacturer can, even with low wages to aid him. This being so with Germany, why not equally so with other European countries? We know that American wheels and wheel materials find a market in all parts of Europe, and we believe that with proper effort the trade in vehicles in the white could be greatly extended wherever fine carriages are used. We can obtain foreign markets only by seeking them. The man who succeeds in obtaining a good European trade must work for it, and after obtaining it he must keep up the standard of his work. One firm that sold a very large number of vehicles sacrificed the greater part of it in one year by reducing the quality, a fact that should prove a warning to all who may wish to market goods in Europe.—*The Hub*.

Cheap Rates on Flour.

MR CHARLES A. PILLSBURY, of Minneapolis, Minn., U. S. A., who is reputed to be the biggest miller in the world, has recently been before the Ways and Means Committee, in Washington, talking politics. He is reported to have said to the committee:

"I can deliver a barrel of flour to you in Washington from my mill in Minneapolis for the same price that it costs me to deliver a barrel of flour at my house in Minneapolis. I can send a carload of flour from Minneapolis to Washington at the rate of 50 cents a barrel, and I cannot hire an expressman to haul it between my mill and my house, which are only two miles apart, any cheaper. I have sent flour all the way from Minneapolis to Liverpool for 50 cents a barrel, and we don't have any right to kick about such rates. This is chiefly due to Canadian competition, and I think that Senator Cullom and your Chicago representatives make a mistake when they oppose Canadian competition."

Mr. Pillsbury manufactures one-fifteenth of all the flour that is made in the United States. The total output of the 18,724 mills is between 55,000,000 and 60,000,000 barrels a year, and the product of his mills alone will average 5,000,000 barrels a year, on which the profit will average not more than 10 cents a barrel.

American Plows in Denmark.

TRIALS with American double and swing plows have recently taken place in Denmark under the auspices of the Danish Royal Agricultural Society. Silver medals were awarded to a 12-inch double plow, manufactured by the Norwegian Plow Company, Dubuque, Iowa, U. S. A.; to the swing plow "Albion H 2," manufactured by the Gale Manufacturing Company, Albion, Michigan; to the swing plow "S. S. 12," manufactured by the Norwegian Plow Company, Dubuque, Iowa. Bronze medals were awarded to the "Eli" swing plow, manufactured by the Rock Island Plow Company, and to the plow "Original No. 2," manufactured by A. Jacobsen, Frangds, Denmark. The judges, in their report, pointed out that a double plow manufactured by Rud. Sack, Plagwitz, and which obtained a silver medal in 1893, was materially improved by now being shown with imitated American shares hardened in oil.

THE Agricultural Produce bill, which has passed its second reading in the House of Commons, England, by a vast majority, provides for the marking of foreign and colonial meats and for the registration of persons who deal in the same. In the course of the debate on the bill it was shown that many stores in London sold little else than American beef, and that, too, at the same price as the British product. It was also claimed that the foreign meat was a great boon to the working people, and that it was impossible to detect the difference between that which was imported alive and that which is grown in England.

American Brooms for the World.

BROOMS of American make are sold all over the world, and the greatest broom cornfields to be found anywhere are in the State of Illinois. A few brooms are made in Europe, but by far the greatest number are imported from this country. There are about 100 establishments engaged in the manufacture of brooms in the United States, and there are many other establishments occupied in the manufacture of supplies used in broom manufacture.

Broom corn grows very much the same as sugar cane. The standard variety reaches a height of about eight feet, the dwarf varieties, used principally in the manufacture of whisk brooms and similar articles, grow to a height of about four feet. Only the tassel or top is used in the manufacture of brooms. These tassels are gathered and pressed in bales containing about 800 pounds each, and shipped to the factories in this way. When about to be used the straw is taken from the bales and immersed in water, and after receiving a bath of water it is dipped in a dye bath of a greenish color. After it is dyed it is then bleached by means of the fumes of burning sulphur. This process of dyeing and bleaching gives to the straw its bright green and yellow colors and leaves it in a condition to be easily cut. It is then separated from the stems of the plant and assorted. The lower stems are stripped off first and are considered the best quality of straw. These are used for the outside of the brooms. When the broom straws are thus assorted they are turned over to the winder, who builds up the broom on a machine peculiarly crude for one that does such good work. The machine consists of a table-like arrangement, at the edge of which is a revolving hollow shaft into which a ready made broom handle can be placed and there securely fastened.

A spindle of broom wire is arranged so as to conveniently play upon the broom handle as it revolves with the hollow shaft. Power is applied by means of a "squirrel cage," so that the machine can be turned forward and controlled at will, and can be reversed.

In the lower end of every broom handle a small hole is bored, and when the workman has placed a handle in the winder the end of the wire is passed through this hole, and a few twists of the machine firmly bind it in place. Under the angle of the wire, stretched from the spindle feeder to the broom handle, the workman places a bunch of the insiding or coarser straw, and gives the handle another turn by means of the squirrel-cage arrangement.

The stub ends of the straw are then trimmed off with a knife, and after one or two rounds of wire have been run around the handle bunches of the shouldering are bound down to the handle on opposite sides of the piece, and after the stub ends of this have been well trimmed, so as to give the shapeless mass something of the form it is to be later, a strap is slipped around the whole and is fastened so as to hold the flying straws in place.

The wire, too, is held in place for the time being by a strong tack driven into the handle so as to cover the wire with the head. The workman then takes two large bunches of the finer straws—the covering—and as the broom handle is revolved he dexterously spreads the covering around the whole mass. This coating of the finer straw is repeated, and the whole is again held in place by a strap. The ends of the finer straw are trimmed and the wire is fastened by a tack, around which it is wound.

A "lock" or tin covering, of fancy shape and design, is tacked on the handle, so as to cover the ends of the straw, and a string replaces the strap as the broom is unclamped from the machine to be passed to the presser and sewer.

The broom press is simply an improved form of vice, so made that a broom can be placed in it, handle downward, and considerable pressure be applied to it. Most hand presses are formed of two very strong boards securely bolted upright to a base, which permits them to move. These boards are brought together at the top to form the vice by a double lever, which produces great pressure between them with a comparatively small use of hand power—two horse-power pressure being applied in most cases.

Other presses consist of a similar clamp arrangement worked with a screw. These are considered easier, but less effective in operation. Into one of these presses the broom is placed and the pressure applied. The straw is forced into about the shape usually seen in brooms, and the workman then sews it.

A strong flax cord of fancy color is passed around the broom twice, and the workman then threads his needle with it and passes it through the broom at intervals of about an inch, all the way across. The needle used is large, with blunt ends, and has the eye in the middle.

The sewer wears a thick leather palm for a thimble, and the sewing is done with remarkable deftness. When the sewing across the broom is completed the handle of the broom is forced further down into the press, and another seam is sewed. In the best brooms four seams are taken; in the cheaper grades three, and in poor grades only two are taken. After being sewed and pressed the brooms are "scraped" or combed out by a large wooden cylinder, from which project many sharp spikes. The finishing process is the trimming of the broom off square at the end.

The machinery and process thus described are those in use in most of the factories over the country, especially where the best brooms are made. The machinery is crude, but effective. Steam machinery has been introduced with but very little, if any, success.

A workman can sew and press 10 dozen brooms in a day, and a machine is claimed to have a capacity of 40 dozen brooms a day with a man and a boy running it. This rate, however, is not maintained by a machine in actual work.

There are many special materials demanded in broommaking. The wire, for instance, is a peculiar steel, tinplated article, most of which is made in

Massachusetts. The broom handles are generally of hard maple taken from the Michigan groves. Often they are made of ash and basswood. The tacks used are of a special make, tinned, strong and not brittle. The cord for sewing, generally of yellow or green or red, is of a wonderfully strong flax spinning.

Last season nearly 6,000 acres of broom corn were planted and grown along the line of the Illinois Central Railroad in Central Illinois. A number of farmers in that part of the State have made this their principal crop for many years and it has proved profitable. Consequently Illinois has the largest broom cornfield in the world.

Much corn is raised in Kentucky, Missouri, Kansas, Texas and other States, but the crops are scattered and irregular and are not of so much profit to the producer. The corn seems to thrive best on timber land soil, and the rich, black loam of the greater portion of the State is too rank for it, the product from such soil being very coarse, red topped and kinky, the latter quality being fatal to its usefulness.

The varieties considered the best are known as Missouri evergreen, Kentucky green and Shaker green. The corn is graded by its color, fibre and general condition. The corn of the best fibre is raised in Texas, where often the straws are four feet long.

This sort of straw is specially valuable for covers. For ordinary work short but fine fibred corn is considered the best, and this is the sort generally raised in Illinois. Broom corn first grew in the swamp lands of South America.

—Item, Lynn, Mass.

To Study Argentina's Wants.

THE New York *Herald's* Washington special says the United States Legation at Buenos Ayres, Argentine Republic, is responsible for the initiation of a movement which if carried into effect will lead to most important results to the trade of the United States with the three big commercial republics of South America. The scheme is for a group of representatives of the leading commercial organizations of the principal cities of this country to make a trip this year to the Argentine Republic, Uruguay and Brazil. Invitations from these three republics have been received by the State Department and for delivery to the Chambers of Commerce and other organizations interested. Secretary Olney has put them into the hands of George W. Fishback, United States Secretary of Legation at Buenos Ayres.

The plan of this visit was submitted to the Argentine Government for its approval, with the general object in view of increasing the reciprocal trade relations between the two countries. The Argentine Government responded at once and gives assurances that in case of the realization of the proposed visit the authorities of the nation will make every effort to show them the country and make them familiar with its vast resources. The Uruguayan Government at Montevideo, the Brazilian Government at Rio de Janeiro, through Ministers Stuart and Thompson, respectively, were addressed in like manner, and responded in similar terms of cordial invitation. The object of the trip is to show to representative men of the United States the great opportunities offered in the Southern markets for American trade.

American Whisky for the World.

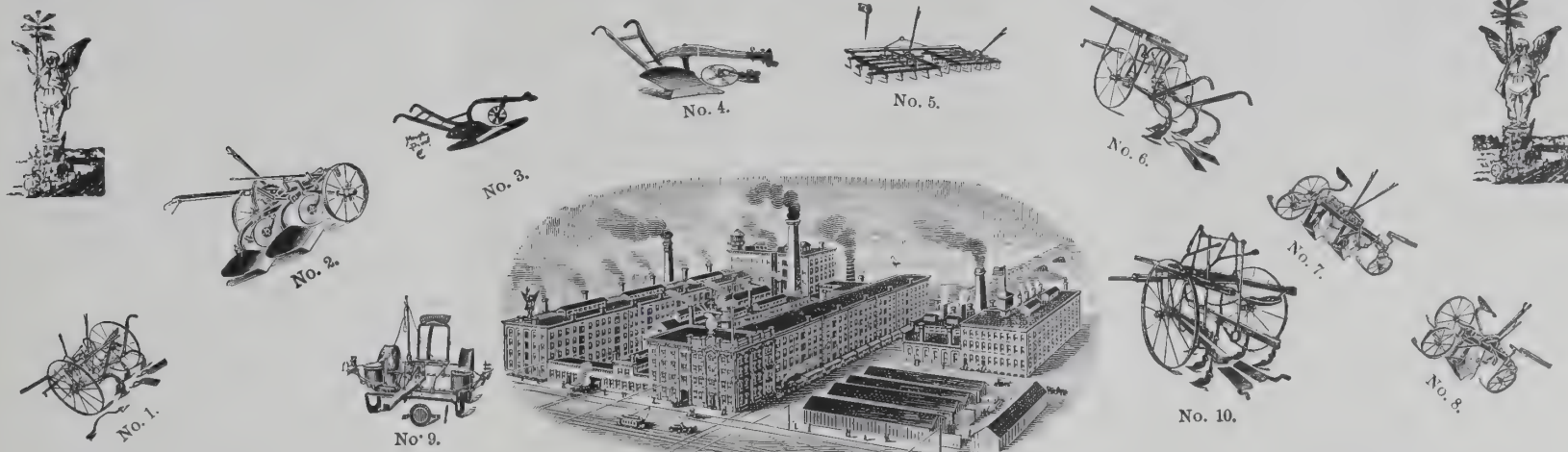
IT is expected that the Evans bill now in the House of Representatives at Washington will become a law. It is designed to permit the bottling of spirits in bond and will thus greatly increase the export trade in American whiskies. Under the present law whisky cannot be exported except in the original packages, unless, of course, the exporter has paid the internal revenue tax. The Evans bill, however, if it does become a law, will permit the export of bottled goods in lots of 10 proof gallons. No drawbacks will be allowed when the quantity exported is less than that quantity. It is expected that with the Government's guarantee affixed across the neck of each bottle of goods we ought to be able in a few years to supply the world with beverage whiskies.

A Nailless Horse Shoe.

AFTER innumerable attempts in the past few years to produce a shoe for horses in which the ordinary methods of shoeing could be dispensed with, an invention has been brought out which gives some promise of meeting this want. The construction of this shoe is very simple. It is made of any desired weight and can be shaped to fit any particular foot. The weight, of course, is easily regulated. The shoe is formed of two pieces, working on a pivot at the toe, at which there are two flanges running upward and at a slight backward angle, so as to conform to the sloping part of the hoof. On each side of the shoe are self-adjusting clamps, so situated as to clamp without compressing the horse's hoof. Between the heels of the shoe is a threaded bar, working into a collar, which sets up with a small wire spanner. This spanner may be carried in the vest pocket. When the horse casts his shoe, all that is necessary to be done is to take the "nailless shoe," open it sufficiently to allow the horse's foot to fit it, then set it up at the heel and clamp it with the additional nut that fits close to the collar. This shoe will not come off. It has the advantage over the old leather and iron boot, which worked on a somewhat similar principle, that there is no binding anywhere if the shoe is properly clamped. It is no heavier than the ordinary shoe, and there is no strap to chafe the horse's ankle. It occupies but little space in the pocket, and to the horse it is fully as comfortable as the ordinary shoe. The shoe, which is recommended by many veterinarians, has been adopted by the ambulance service of several cities.

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U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
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No. 2 Wheel Walking Gang Plow, 24 inches.No. 3 Steel Beam Plow with Rolling Coulter S. H.
No. 4 Wood Beam Plow with Rolling Coulter.No. 5 Steel Lever Harrow.
No. 6 New Western Cultivator.
No. 7 Flying Dutchman Gang Plow.No. 8 Flying Dutchman, Jr., Sulky Plow
No. 9 Moline Champion Corn Planter
No. 10 Dutch Boy Riding Cultivator.

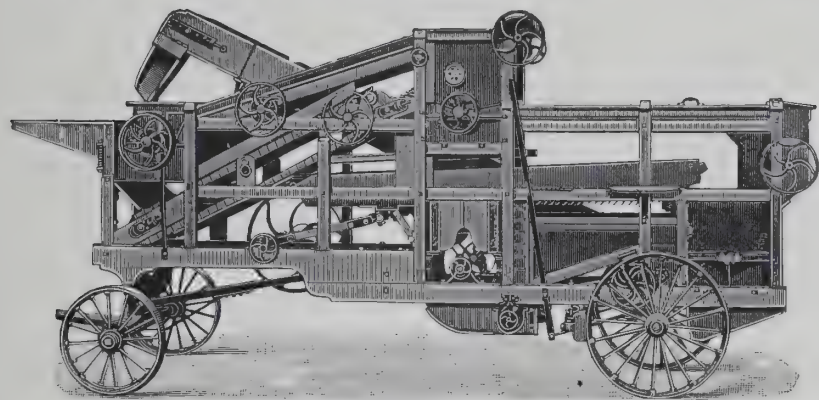
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MANSFIELD, OHIO, U. S. A.

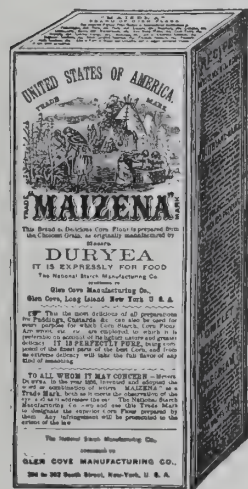
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"MAIZENA."

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DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

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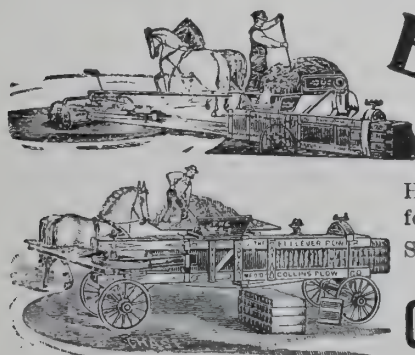
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Paris Exposition,
1889.

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None GENUINE without "DURYEY" appearing on the face of Package.

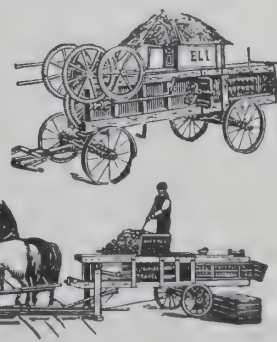
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different shapes and sizes of Riding and Walking**PLOWS.**

Send for Catalogues.



Largest Hotel in the World.

BOSTON, MASS., U. S. A., is to have the largest hotel in the world, and it is to be built during the coming year. The ground has been purchased and plans accepted for this remarkable building. It will be named "The Commonwealth" and erected on Commonwealth avenue in that city. Its total cost will be something like \$3,000,000.

The building will be 11 stories high, but owing to its well-proportioned lines it will not have the appearance of being extremely tall. It will be built of fancy buff brick and terra cotta, and in effect will be something like the Charlesgate. The design is after that of the palace of the Duke of Mecklenburg-Schwerin, in the north of Germany. The hotel will be in three sections, each one containing more than 700 rooms, and making a total of 2,250 separate apartments.

The plans provided for are an open court between each section of the house 70 feet wide and giving ample light to the rooms facing it. Then in each section there will be an interior court 35 feet square. The dining-room is to be on the north side, next to the river, a handsome one-story structure, divided by an ingenious arrangement of lines into a number of cozy, half shut-in apartments. The suites will be of various sizes, and each will have the advantage of a double elevator service, one set of elevators being for passengers and the other for freight. There will be 21 elevator wells in the building.

The hotel is to have one of the most beautiful banquet halls in this country and a magnificent ballroom as well. In addition to this it will have an ice skating rink, which will be used in Summer as a bicycle pavilion. The hotel will be especially fitted for the purpose. There will be an elaborate refrigerating apparatus in the hotel, and this will be used to make ice for the skating rink, the floor of the rink being flooded and the water congealed by the same method as employed in the Niagara rink in London. Many other unusual features are in the plans.

Japanese Competition.

CONCERNING the impending ruin threatening the industries of this country by Japanese competition, and so often referred to in the daily press, we will let the *Japan Mail*, the great weekly journal of Yokohama, speak on the subject. Here is what it says:

"Cheap and expert labor is not the only essential to success in such competition. It has been proved that even in the case of an essentially Japanese specialty the shrewd, experienced European can more than hold his own. We allude to lacquer. The Japanese stand easily at the head of all nations in the quality of their lacquer. There, if anywhere, they should be able to defy rivalry. Yet, what are the facts? Japanese lacquer experts in their attempts to capture the New York market have had their thunder stolen by Germans, who gauge the taste of the Americans with much greater accuracy and produce lacquers better appreciated and cheaper than those of the Japanese themselves. Not fine lacquer, indeed, nor anything like as fine, but better suited to the immediate purpose of its manufacturers. Another case in point is the work of the silversmith. As chiselers of metal the Japanese have no peers. Their skill in that line ought to open a wide and profitable field in Europe and America. But it does not. With the exception of a few fancy articles, objects of art rather than of utility, they sell nothing abroad. They have not yet found the range of Occidental taste, and, judging from past experience, it seems likely that they will continue to waste their strength for a long time upon unfruitful essays."

American Armor Plate Ordered by Russia.

THE *Herald* says that a group of 350 tons of American armor for the first-class cruiser Russia was accepted by the Russian Government after a test on the Indian Head proving grounds. The armor is five inches thick, and a ballistic plate was tested. The plate was fired at six times with five four-inch shells and one five-inch shell, and only the last shot succeeded in doing any damage. Under the contract requirements only four shots were necessary, and the armor repelled these with ease. The fifth and sixth shots were experimental, and demonstrated to the satisfaction of those witnessing the trial that the plate was an excellent one. The armor was manufactured by the Carnegie Company under a contract for 1,100 tons made with the Russian Government some months ago.

The eyes of the naval world were upon the test, and it is expected that not only Russia, but other foreign governments, will now be glad to obtain American armor.

BEFORE the Committee on the Adulteration of Food, held in London, March 18th, Mr. T. H. Elliott, secretary of the Board of Agriculture, testified that among the samples of food examined by the Government 51 came from the United States and 39 from Canada, not one of which was adulterated. Germany, he added, made the worst showing, adulterations having been found in 37 out of 124 samples examined.

THE CRAMP SHIPBUILDING COMPANY, Philadelphia, Pa., U. S. A., lately held the attention of the United States, and of the world as well, to a considerable extent, in the successful launching of the greatest battleship afloat—the Iowa. Other nations have more ships than this one, but none has better. It is gratifying, if we cannot have quantity, to at least stand unrivalled in quality. That has been the happy result of most of the ships built for our navy—we may say of all of them—that they have exceeded expectation.

Enormous Increase of Exports.

THE following table shows the increase in the exports in certain lines of manufacture for the month of February, 1896, as compared with the corresponding month of 1895. This remarkable showing is an evidence that American goods are being appreciated in foreign markets and that every effort should be made by our manufacturers to secure a still larger share of the trade in these lines:

	Feb., 1895.	Feb., 1896.
Agricultural implements.....	\$270,183	\$347,159
Candles.....	9,626	19,514
Carriages and street carts.....	92,130	151,834
Passenger and freight cars.....	51,112	74,012
Chemicals, drugs, dyes and medicines.....	614,937	720,968
Clocks and watches, and parts of.....	102,139	112,424
Glass and Glassware.....	66,034	83,794
Glue.....	9,068	16,413
Printing and other inks.....	7,899	23,562
Scientific instruments and apparatus.....	134,465	224,058
Builders' hardware.....	181,027	258,696
Saws and tools.....	138,501	174,242
Machinery.....	636,070	1,259,116
Locomotive engines.....	178,000	285,557
Stationary engines.....	9,419	40,049
Boilers and parts of engines.....	22,670	38,842
Printing presses, and parts of.....	6,167	57,598
Sewing machines.....	162,985	215,741
Boots and shoes.....	68,641	128,518
Harness and saddles.....	9,647	14,584
Organs.....	42,934	50,722
Paints and colors.....	48,999	78,503
Writing paper and envelopes.....	7,948	11,086
Plated ware.....	17,835	22,914
Soaps, all kinds.....	49,255	106,189
Starch.....	29,921	67,522
Stationery, except of paper.....	49,469	60,060
Toys.....	3,429	7,705
Varnish.....	21,477	30,600
Doors, sashes and blinds.....	13,583	25,702

New Kind of Carpet Lining.

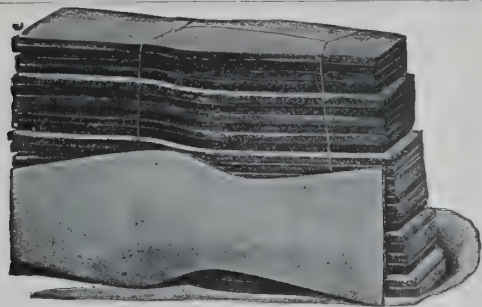
A CARPET lining made entirely from wood and paper pulp is one of the newest articles to be produced from that seemingly unfailing source—paper, says an exchange. Carpet linings made from manilla paper, folded in flat rolls, or otherwise constructed, are common enough, but the new type of lining is quite out of the ordinary. Anything that is between two layers, as a carpet lining (which is between the floor and the carpet), must be porous so as to allow the dirt that works through the texture of the carpet to sift through to the floor. Again, the lining must be flexible and smooth. It must also be moth proof. These ends are obtained by running the pulp on the floor to an average depth of one-quarter inch, which will furnish a good, smooth, elastic foundation for the carpet. The pulp fills every crack, bad place, depression, and forms a perfectly level surface. Exposure to the air dries the composition in a day or so. The carpet is laid directly upon this surface, which, being absolutely smooth, and just elastic enough, makes the poorer grades of carpets seem like the softest and most costly of pile textures.

American Goods Will Be More Respected.

THE British Government has at last made an important concession in the custom house administration of merchandise marks acts, which will be heartily welcomed by American merchants and manufacturers exporting goods to Great Britain and to other parts of the world by way of Great Britain. The onerous, and as it often happened ridiculous restrictions, upon trade hitherto imposed by the British custom house in detaining and even confiscating imports from America, on the ground that their marks infringed the marks of British traders, when those traders were clearly shown to be the original American exporters having business branches in the United Kingdom, and who were, therefore, technically known as British traders, whether or not the innocently offending imports were designed for British consumption or for transit to the Continent, have now been removed, and henceforth American and, indeed, all foreign houses, will be relieved of a harassing restriction, which in the past has given rise to inconvenience, loss and bad feeling.

THE State of Indiana, it is claimed now, makes more than one-third of the window glass manufactured. The product of Indiana is about 50 per cent. of all the glass manufactured in the United States, and it controls the market. The same may be said of its manufacture of glass jars and bottles. This is largely due to the employment of natural gas, and it may be said that the industry has practically grown up within the past seven years.

THERE is no country on the face of the earth to-day where so little manual labor is done as in America, no country where machinery enters so largely into domestic economy, and no country where the native population is so capable of comprehension, so fit for self government, so intelligent and prosperous; and the simple reason for it all is that we work with our brains. The man who guides the movements of a turret lathe must use his brains, else he is of no value, and the mere fact that he does so stimulates him to investigate and to think. The average man who digs in the earth or chops wood in the forest has no more thinking capacity than the woodchuck or the beaver. The public school, the ballot box and the machine shop—these three have made us a nation of philosophers.—*Cycling Life*.



Shoemakers and Shoe Repairers save Money, Labor, Waste and Time when they use Cut Sole Leather (Soles, Half Soles, Heel Lifts, etc.) Prices and full particulars will be furnished on application.



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Gentlemen—We have now in use in the Bureaus of this Department nearly eighty Denmore machines. We have no complaint from the users of them, hence we conclude they are giving entire satisfaction. Respectfully,

(Signed) HIRAM BUCKINGHAM, Custodian.

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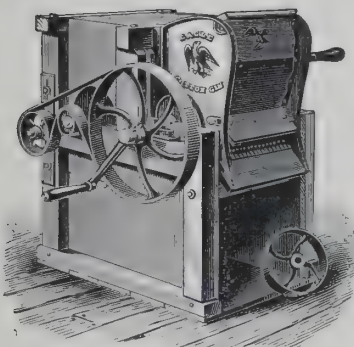
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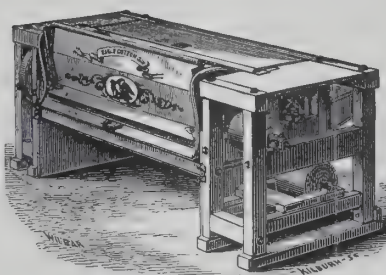
EAGLE COTTON GINS.



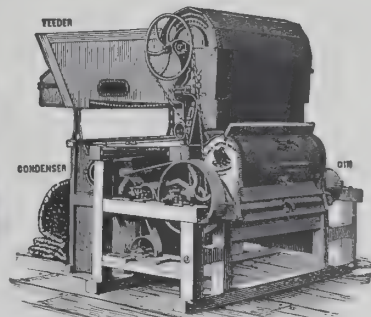
These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

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Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

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On receipt of \$10 we will send a sample line at export prices.



have holders made of best quality vulcanized rubber, are elegantly finished and are fitted with best make of Gold Pens.

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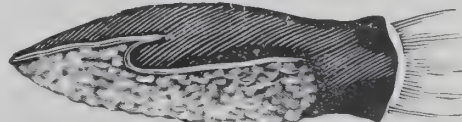
Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

Stove Polishing Mitten,

FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty-four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands. \$18.00 per gross F. O. B. at New York.

For Particulars address **DIAMOND HARDWARE CO., 620 Atlantic Ave., Boston, Mass., U. S. A.**



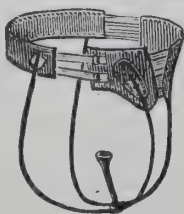
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Artificial Limbs.

THE Douglass artificial legs have been manufactured by the inventor, D. De Forrest Douglass of 206 and 208 Union street, Springfield, Mass., and 13 and 15 Tremont street, Boston, Mass., during the past 48 years, and applied to all amputations of foot, leg and thigh.

They are used in all parts of the world. By a system of accurate measurements, blanks for which will be sent to any address, the most satisfactory results are obtained in treating patients in foreign countries.

It is only by a thorough anatomical knowledge of and practical experience in treating each case with precision, that the required natural movements can be reproduced in the artificial limb. Mr. Douglass has had this most necessary and varied experience in manufacturing and adapting artificial limbs to the requirements of his large number of patients. He is therefore eminently qualified to make and adjust artificial limbs so as to make them most useful and natural and give the greatest possible satisfaction.

The articulation of the knee, ankle and toe joints of his artificial legs simulates closely the natural, and imparts to them a life-like appearance. Their step is so light and elastic that the patient is able to walk in a manner that cannot be easily detected from the natural gait, obviating at the same time the stiff and clumsy appearance of the artificial foot *without articulation* of ankle joint, substituting rubber, which is objectionable owing to its weight and odor; also its rapid loss of elasticity.

The following are some of the features which recommend his artificial legs:

The foot conforms in walking to the unevenness of the ground and in any position has a firm, reliable step. In sitting posture it readily responds to any inflection of the knee; hence it cannot be distinguished from the natural leg by its appearance. This mobility imparts much greater ease and comfort to the stump, lessening as it does the labor imposed thereon, and the consequent unpleasant sensation, thus allowing it more freedom and force in acting in unity with the artificial leg.

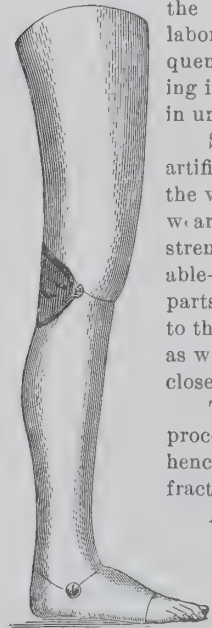


FIG. 2.

After being fitted and adjusted, the exterior is covered with a strong skin especially prepared, firmly cemented thereon, most beautifully finished and rendered impervious to moisture by an enamel closely imitating the appearance of the natural limb. The bottom of the foot is cushioned, always retaining its elasticity, to prevent noise and unpleasant jar in the walking. Also, they are finely ventilated, allowing the air to pass to the stump, keeping it cool and healthy.

Referring to the accompanying illustrations: Fig. 1 is for amputations below the knee. The lower part is accurately fitted and adjusted to the stump, and comes to the patella. The upper part, made of the best oak-tanned leather, lined with soft buckskin, laces on the thigh and is connected with the lower socket with strong steel joints, reciprocating perfectly in action with the natural joint, giving great relief to stump in its bearings and adding greatly to the ease and comfort of the patient in walking.

Fig. 2 is for amputation above the knee. The socket is carved to fit the stump so as to distribute the weight evenly. This extends to the body, curved at the top to conform to the perineum. By an easy anterior movement of the leg responds in a perfectly natural manner in step, avoiding the jerky movement so noticeable in other artificial legs partly stiffened by knee springs.

The support and adjustment is by strong elastic straps, easily worn over the shoulders, which readily adapt themselves to all movements of the body.

The United States Government furnishes these limbs for officers and soldiers who lost legs in line of duty.

Mr. Douglass will be pleased to give information and furnish blanks for measurements to any one in any part of the world.

—A mammoth project for the transportation of passengers through the streets of Cleveland is under way. The plan embraces the practical use of horseless carriages on time schedules, with various lines in operation over regular systems of streets. In effect, the carriages will be street cars in operation without rails, wires or cables; street cars that can climb or descend hills with ease; street cars that can go in side streets and that will load and unload their passengers at the curb. They are provided with gasoline motors of the most approved order.

Notes of Interest.

A FIRM of granite dealers at Westerly, R. I., U. S. A., have been awarded a contract for the monument of William E. Gladstone. The firm will ship the rough granite to their works in Scotland, where it will be made into an elaborately carved cross.

IT IS reported that a firm in Montana has contracted to ship to Germany 2,500,000 bushels of barley during the coming season, and if the venture pays those who are interested in the deal will arrange to ship a much larger consignment from Minnesota.

MR. E. N. BISSELL, a well-known breeder of sheep in Vermont, U. S. A., contemplates sailing this Spring for the Argentine Republic, taking with him a small shipment of merinos. Mr. F. S. Haskell, of West Cornwall, Vt., is now in California selecting another lot of sheep of fancy breeds for shipment to the same country. This foreign demand for American fine-bred sheep goes to show that our South American friends are anxious to improve their stock and increase the production of fine wool.

AMERICAN candy is proving very successful in England, where the confectioner's art is at a low stage. An American traveller reports that "an English candy store, called a 'sweetmeat shop,' is a terrible sight; everything looks sticky, nasty, and largely colored with obviously unhealthy substances. Also, there seems to be little, if any, attempt to keep these 'sweetmeats' fresh, and the prices at which they are sold—20c. a pound—almost preclude their being made of good materials."—*Chicago Tribune*.

THE *London Boot and Shoe Journal* says: "America threatens to become very soon one of England's keenest competitors, and that, too, in the home market. American imports are rapidly increasing, and why? Not because of cheap materials or low weekly earnings of American shoemakers, but by reason of the low cost of production and a free and unrestricted use of machinery, which enables American manufacturers not only to compete with English product in our own country, but in our colonies also."

A STRING of fine coach horses has been shipped to England from the auction barns in East Buffalo. There were 39 well-bred, good shaped and proper-weight horses, ranging in value from \$400 to \$900 each. The total value was \$25,000 and was one of the most important shipments of that kind this year. The general idea is that only cheap horses are handled in East Buffalo, but the impression is incorrect, for there are many high-priced horses sold there. The volume of business since January has doubled compared with last year.

JAPAN is buying her steel rails at the Pennsylvania mills, finding them cheaper there than in England, and of a better quality. At the same time our furnaces are shipping pig iron to the British market, underselling the home product, to the amazement and consternation of the producer there, who would have smiled at such a prediction a few years ago. The world really moves as Galileo said it did, but more than formerly, it revolves on its axis, subject to the Constitution of the United States, as the British ironmaster has sadly discovered.—*New York Tribune*.

"PRINTERS' wages in the United States are double those of English printers," writes the London correspondent of the *New York Tribune*, "though the cost of composition is the same." The reason given in a contemporary is that the American printer is more expert, doing more work in the same number of hours. With higher wages in this country it costs us less to print books. This is a new illustration of an old fact. High-priced labor is cheaper than cheap labor. The measure of the cost of service is the result attained. We are informed that a local publishing house succeeded in getting out a book cheaper than it could be printed in England, just because the men here work faster and better.

EX-SENATOR E. H. HAMMOND, of Orlando, Fla., and Colonel T. J. Appleyard, of Sanford, Fla., have been in Cleveland in consultation with S. T. Everett, of the Everett Electric Railway Syndicate. As a result a company will be formed in Cleveland, having for its object the construction of electric street railways in Havana as soon as the war is over, and the ultimate extension of the system throughout the island. Such railroads have been impossible heretofore, owing to the oppressive taxes levied by Spain. The gentlemen interested say that even if the insurgents are not victorious they have assurances that Spain will mitigate many of the conditions which have caused trouble and prevented business progress in Cuba.

THE best zithers are manufactured in this country by a man who came here from Austria in 1864, and who lives in a cozy cottage on the banks of the Missouri River, near St. Louis. He is Franz Schwartzter, a graduate of the Polytechnic Institute at Vienna, the inventor of the harp zither and the introducer of the 12-string mandolin and the mandolinette, a mandolin in the shape of a guitar. No man in the world has done more to perfect string instruments than he. He now employs a large number of skilled assistants and turns out many thousands of zithers annually. These find a ready market at home but many are shipped abroad. He had acquired a reputation in Austria as a maker of zithers before business troubles caused him to come to the United States, but he arrived here poor and almost friendless.

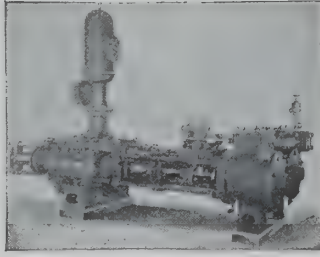
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The Monitor Coffee Separator and Grader

Will make clean separations and grade in one operation.

The Monitor Coffee Milling Machine,

The most perfect miller for coffee ever offered. It will do the finest work on tender as well as hard coffees, and do it without waste or breakage.

These Machines are in successful operation in many of the largest Coffee Houses in this country, and are well worthy of investigation by Handlers of Coffees.

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"Union" Shoe Buffing and Moulded Heel Scouring Paper,

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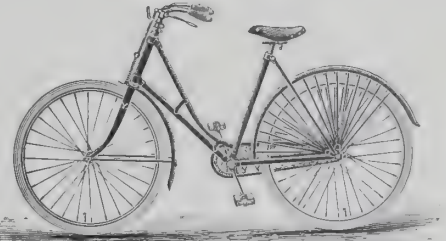
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None but expert mechanics employed in their construction.
Absolutely high grade in every detail.
Best wheels ever offered at anything like the price.
Write for catalogue and full information as to terms, etc.

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CROSBY STEAM GAGE AND VALVE COMPANY,

MANUFACTURERS OF

Standard Steam Appliances.

Awarded the GOLD MEDAL at Paris, 1889.

Crosby Pop Safety Valves and Water Relief Valves,

Crosby Improved Steam Gages, Single Bell Chime Whistles,

Crosby Steam Engine Indicators, and many other specialties.

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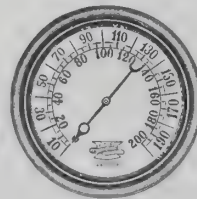
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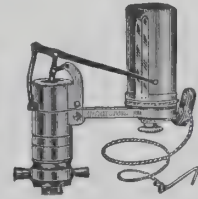
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Water Relief Valve.



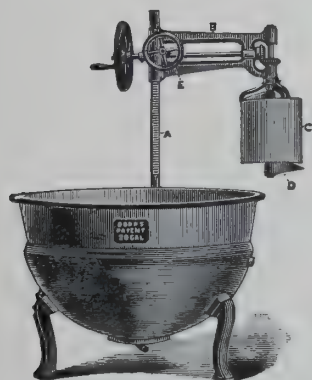
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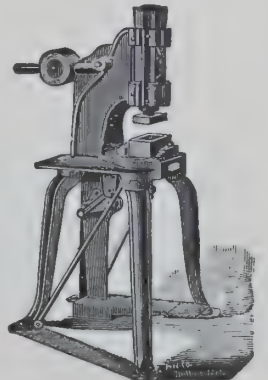
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H. WM. DOPP & SON,
MANUFACTURERS OF
Soap Makers' and Butchers' Machinery,
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Swing Foot Lever Soap Presses, Nos. 1 and 2. Combination Foot and Steam Power Soap Presses. Improved Soap Remelting Catchers, either with or without 8 Horse Power Engine attached. Seamless Steam Jacketed Kettles. Steamed Jacketed Toilet Soap Kettle, with Agitator (three different styles). Steam Jacketed Rendering and Refining Kettles.

Improved Lard Dryer, Mixer and Cooler. Steam Jacketed Vacuum Pans, Hotel Kettles for Boiling and Steaming in Hospitals, Institutes, Barracks, Hotels, Asylums, &c. Steam Jacketed Glue Pot Heaters. Iron Soap Cutting Frames, with Adjustable Wires. Soap Dies, for Stamping and Moulding the Soap. Hand Stamps, Steam Traps, with Balanced Valve, &c.

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MENTION THIS ADVERTISEMENT.



ALWAYS SEND DUPLICATE OF YOUR ORDERS TO US, TO AVOID DELAY AND ALL ERRORS.

Long-Distance Electric Power Transmission.

THE feasibility of power transmission by means of electricity over distances of limited extent has been clearly demonstrated in the long years of experience with the direct current, but transmission by means of the direct current speedily reached a limit beyond which, for economical reasons, it became inadvisable to go. Yet it was conceded possible that power could be transmitted over very long distances. How best to effect this became the urgent question of the hour.

The direct current was, perforce, discarded, and the alternating current was called into requisition. Attainment of an economical solution was by no means easy. Difficulty after difficulty arose, requiring countless experiments to elucidate; and alteration after alteration in machinery was made, involving the expenditure of vast sums. By successful and painful stages, a solution was finally reached, and to-day the long-distance transmission of power by electricity is an established economic fact of a potentiality which seems limited in its comprehensiveness only by the exhaustion of the available natural forces of the earth.

Indeed, everything points to a corner in water powers, speculative enterprise keeping steady step with honest industrial initiative, and generally a little in advance. Waterfall and cataract have suddenly assumed a greater interest to their owners than that imparted by their merely scenic features. Hitherto unutilized water powers have become, in sanguine imagination, possible gold mines in futuro, and the elimination of the domestic coal heap and relegation of the steam engine to the oblivion which awaits the discarded have become articles of faith with water-power proprietors.

By far the greatest number of the long-distance transmission installations of the world are situated in the United States. The American seems endowed with the courage of temerity, and is willing to adopt a new thing with promise only, where other nationalities demand assurance or proof. A possibility has a special attraction for the American mind, and the risks of its realization are willingly run. It is this spirit that has covered the United States with electric lighting stations, spread a network of electric car lines over every city of any importance in its boundaries, and initiated the suppression of the steam locomotive itself from its main line railways.—*Cassier's Magazine*.

Utilization of Water Power in Generating Electricity.

THE large amount of work which is being done by water-wheel manufacturers in this country in connection with electric power transmission indicates a renewed interest in the utilization of water power wherever available. The Pelton Water Wheel Company, of San Francisco and New York, has recently made several important installations of such plants in both this and foreign countries.

Among those recently made in foreign countries are the following: A 3,000 horse-power plant for the Regla Electric Transmission Company, in Mexico, running under a head of 800 feet.

An 800 horse-power plant for the Compania Explotadora de Lota y Coronel, Chile, running under 360-foot head.

A 1,000 horse-power plant for the Kyota Electric Power Company, in Japan, running under 110-foot head.

A 450 horse-power plant for the Boza Electric Company, in Costa Rica, running under 200-foot head.

A 600 horse power plant for the Petropolis Electric Power Company, Petropolis, Brazil, running under a head of 260 feet.

In the United States the following afford a fair illustration of the company's undertakings:

A 2,500 horse-power plant for the Big Cottonwood Power Company, Salt Lake, Utah, head 380 feet.

A 2,000 horse-power plant for the San Joaquin Electric Power Company, Fresno, Cal., head 1,410 feet.

A 1,000 horse-power plant for the Nevada County Electric Power Company, Grass Valley, Cal., head 206 feet, as also a large number of others.

These installations, it will be observed, are under high heads, although the wheels are said to be equally well adapted for heads as low as from 30 to 40 feet. The company has recently shipped some 30 wheels to Mexico, Central and South America, for coffee and sugar plantations, and they have now a large number of plants under construction for other localities.

A New Industry on Electric Railroads.

THE newest industry in connection with street and other electric railroads is the supplying of car sprinklers. A company which has been formed for the purpose will either lease its sprinklers or contract to do the entire sprinkling for any city, or will form local companies to carry out the work. The sprinkler for electric railways consists of a large tank, over which is built a plain car. The whole is mounted on any kind of truck. Two men are needed to operate the car, one managing the motor and one the sprinkler. Any rate of speed up to fifteen miles an hour can be maintained. The car is filled from hydrants placed flush with the pavement, between the tracks if on a double track road, and close beside the rails if on a single track. The tank is filled in one or two minutes, according to the pressure. The stream is under perfect control. A tank fully loaded will sprinkle from five eighths to one mile of street, according to the width of the street.

—Washtubs of vitrified brown stoneware are being manufactured by firms in America.

Trade Catalogues for Foreign Service.

ONE of several things worth studying by the machinery builder who expects to find a market in foreign countries for some of his output is efficient representation in those countries. Most people, before they buy a thing, be it a machine, or something else, want to see it—want to satisfy themselves, as far as they can, that it is what it is represented to be. The engine, or dynamo, or crusher, or whatever it may be, that can be shown on the spot, by sample, will often find a purchaser to whom merely an agent's description or a catalogue illustration would be more or less unsatisfactory. The builder whose agent has specimen machinery to show will always fare better than the one who trusts simply to pictures and to his reputation, however good and widely known this latter may be in his own country. He should always bear in mind that the foreign purchaser may not know him, or even of him, and that the contemplated business transaction may be the first that is to be entered into between them. The character of the machinery itself, the promptness with which it is shipped, and the condition in which it reaches him, may be of infinitely more moment to the man who is buying than a whole continent full of good reputation. And then the matter of catalogues. Catalogues for the Latin countries—in South America, for example—written in English are oftentimes quite useless, almost altogether so, if brought into competition with a Spanish catalogue of some enterprising rival builder. Though English may be spoken and understood more or less, the mother tongue is preferred whenever possible, and the maker who tells of his wares in that tongue is more than likely to receive first consideration. To some extent this fact has been recognized by English as well as American engineering firms, and catalogues written in the Spanish language are not uncommon. But, after all, they are the exceptions rather than the rule, and might be profitably multiplied in number many times over.—*Albert Spies in Cassier's Magazine*.

Peat Cutting and Handling Machinery.

MACHINERY designed and built in Boston, Mass., has just been shipped to the Bogs in Ireland for the purpose of converting peat into briquettes. Each machine has a capacity for pressing and drying 60 tons and upward per hour at an exceedingly low cost.

It is the intention of the company to place a large portion of their output on the American market for all fuel purposes. Negotiations are well under way also for furnishing this fuel to several of the transatlantic steamship lines.

The peat is to be dug and delivered into these briquette machines by three of the "Lancaster" Combination Hoisters, working either a grapple or a shovel, according to the varying character of the bogs.

Each combined machine is self-propelling and has a capacity of digging and handling from 70 to 80 tons per hour, is controlled and operated by one man, and will dig and deliver the peat at any point within a 50-foot circle.

The entire cost of thus digging and delivering the peat to the briquetters by the "Lancaster" machines will not exceed 1 cent per gross ton.

Worcester-Made Tools.

WORCESTER made machine tools have a world wide fame for variety and excellence, and the city's production of these is so extensive that it has become one of the greatest centres for their manufacture in the country. A gentleman from Paris, who visited that city recently, made the statement that the French much prefers the American-made lathe and drill to any other make. The local machine tool business is in the main prosperous, and much of this prosperity is the result of the foreign demand. Worcester-made lathes, engine lathes, drills and milling machines are sent direct to almost every country in Europe, Mexico and South America.

Worcester-made machine tools, to a large extent, find their way into the mines of the country, no matter how remote they may be. The export trade is continuous and promises to be of great importance in the not distant future.—*Worcester (Mass.) Gazette*.

American Tin.

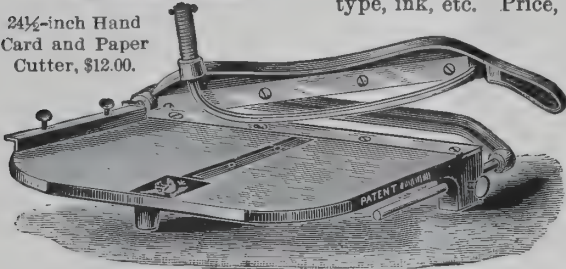
THE *Iron Age* says: "Foreign tinplates are rapidly disappearing from our markets. American tinplates have been supplanting them in steadily increasing quantities from the establishment of the tinplate industry on this side of the Atlantic, but not until this year have the effects of domestic competition been very plainly marked. Heretofore, American tinplates have struggled for recognition in many of our trade centres, with foreign tinplates persistently occupying the most prominent place and refusing to be dislodged. Now, however, the situation has materially changed, and American tinplate is in the lead. The great fight for the American tinplate trade is practically over, and henceforth the demand for foreign tinplates will be on the wane."

—It is reported that the George L. Squier Manufacturing Company of Buffalo, N. Y., U. S. A., has purchased the entire plant and business of the McConnell Filter Co., and will hereafter make the improved "Crystal Fountain" water filters.

—The New York State Electric Company, Youngstown, Ohio, U. S. A., recently shipped 1,000 "New York" lamps to Liverpool, England, the first consignment on a large contract. These lamps are packed in one box made of 1¼ inch Norway pine, with three compartments, and all securely strapped with steel hoops and so arranged as to take up the least number of cubic inches, the company's own design especially gotten up for export shipments.



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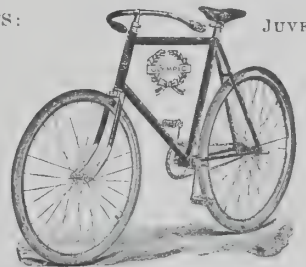
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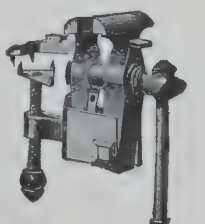
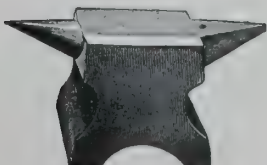
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Miscellaneous Notes.

—Golf sticks and roller skates have been recently made of aluminum.

—Some of the most complete steam-power plants in this country are connected with wood-working concerns. Several mills are said to be driven by electricity.

—The United States now controls the world's iron trade, producing about 11,000,000 tons annually. England, the former mistress of the trade, produces only 6,709,000 tons.

—The Dow Steam Pump Works, of San Francisco, Cal., U. S. A., lately shipped to Central America four boiler feed pumps and a sink pump, as well as one large sinking pump for Mexico.

—In five years South Carolina farmers developed tobacco production in that state from nothing to 10,000,000 pounds last year's crop. This is 5,000 net tons. The crop probably brought its producers \$400,000 in cash.

—The electric current is being utilized to hasten the process of tanning. Leather, which took nearly a year to tan by the old process, can now, it is claimed, be tanned in from three to six weeks or less by the aid of electricity.

—The Geo. L. Squier Manufacturing Company, Buffalo, N. Y., U. S. A., have gotten out a neat booklet illustrating and describing their Crystal Fountain patent germ-proof filters. This booklet will be mailed upon application.

—During nine months of 1895 England exported \$4,000,000 worth of bicycles. Of this amount the United States took only \$94,000 worth. The United States has wheeled into the line of making better bikes than England turns out.

—In the United States there are churned, pounded and patted into proper condition every year 15,000,000 pounds of butter for export, to say nothing of an immensely larger quantity which is daily spread upon home-made bread and consumed instantaneously.

—Mr. H. Beneke, Flensburg, Germany, late United States Consul, is now occupied in introducing American manufactures, especially of the electrical kind, into Germany, and he will be glad to hear from any firms or persons desiring representation.

—The bicycle boom is increasing in volume daily in Great Britain. The leading English firms are already completely blocked with orders. Two American firms recently started doing business in London with a large stock of wheels, and they are reaping a harvest.

—The great progress made in the manufacture of American armor plate is illustrated in the offer made by the Carnegie and the Bethlehem companies to furnish all the armor required for six battleships within a period of 28 months from the date of the contract.

—An American paper mill concern is manufacturing a high-grade of paper which is used for making carpets, rugs and art squares. The paper is about the thickness of an ordinary tissue paper, and after being cut in stripes, is twisted tightly and then woven into warps.

—Forty Stark County, Ohio, horses are being selected for export to the German Government, each to be 16 hands high and to cost not over \$150 each. If the sample lot is satisfactory 400 more are to be selected. It is said 6,000 American horses are to be shipped altogether.

—"American pianos hold sway in Mexico now, said J. L. Kent, of that country, who represents piano concerns in the United States in the Southern Republic. "It used to be that only German pianos could be sold there, but they have been supplanted entirely by the American manufacturers.

—Again a Carnegie armor plate which was supposed to be deficient has stood a remarkable test. When tried it resisted the best projectiles hurled with the greatest velocity. Evidently the world does not fully know the progress that is being made in the manufacture of American armor plate.

—The steamship Wansbeck cleared the Custom House, Philadelphia, March 28th, with a cargo of locomotives built in that city for Libau, Russia, valued at \$220,000. The cargo consisted of 16 complete locomotives. They were for use on the new Siberian road and made to use either petroleum or coal for fuel.

—Another carload of redwood has just been shipped from California to Nuremberg, Germany, for use in making lead pencils. The cedar forests of Europe that formerly supplied wood for pencils have been practically exhausted, and experts sent to search for a substitute reported that the California redwood appeared to be the best available material.

—An order amounting to over \$6,000, including various kinds of heavy machinery, has just been placed with a Cincinnati firm, by the Cia Mechanica e Importa dora de Sao Paulo, of Sao Paulo, Brazil. This machine works is said to be the largest concern of the kind in South America. One machine in the shipment that will be made will weigh 15 tons.

—It is reported that the Germans, who have recently made heavy purchases of American apples, intend to use this fruit in the manufacture of champagne by an entirely new and secret process. Whether this is true or not, the American apple is gaining a firm foothold in European markets, in spite of the enormous quantities of French and Dutch fruit.

—A good idea may be gathered of the extent to which transmission of power by electricity is gaining ground in this country by the statement that, in the long distance plants installed by the General Electric Company during 1895, over 1,200 miles of copper wire for transmission purposes alone were used, amounting practically to 12,000,000 pounds of copper.

—Mr. Juan Abella, Director-General of Public Lighting for the municipality of Buenos Ayres, South America, is visiting the United States to secure data on our central station plants and systems. Mr. Abella will visit the principal cities and electrical manufacturing establishments of the country. He is preparing to install a plant of 6,000 arc lights in Buenos Ayres.

—Three hundred and fifty thousand pounds of American wool for shipment to England. The iron and steel markets have disclosed a similar feature, for a little Alabama pig has been sold for export iron, though few imagine that much business of that sort is possible. The Carnegie works have sold 10,000 steel rails to Japan, thus scoring a noteworthy success, but in the main the market is as inactive and insufficient as it has been.

—By a sale closed by Chicago officers of the General Electric Company, the longest electric railway in the world is assured. The sale was to a syndicate of capitalists, and consisted of the electric street car line of Kalamazoo, Mich. The buyers already own the plants of Battle Creek and Lansing, Mich., and will connect the three towns. This will make a straightaway line of 75 miles.

—Some idea of the magnitude of the bicycle industry may be gained by contemplation of the fact that one ballmaking concern, the Cleveland Machine Screw Company, Cleveland, Ohio, U. S. A., is now making balls in bicycle sizes at the rate of about 600,000 per day, and has orders for 104,000,000 for this season. They expect this season's output to reach 125,000,000, for which will be required about 200 tons of tool steel.

—The Cunningham Manufacturing Company, Kingston, N. Y., U. S. A., recently received an order for \$1,000 worth of their Dissicated Egg Food from Cape Town, South Africa. The company has under way a \$10,000 order from Havana, Cuba. Besides this, it has made three different contracts, each calling for \$50,000 of the product annually, to be shipped to foreign countries. The egg food is now used in all but two of the countries of South America, in the West Indies, Mexico, all Central American republics, Australia, England, France and Japan.

—It is noticed in one of our foreign exchanges that American hardware is already a factor in South Africa. In barbed wire it is claimed that the American article has a practical monopoly. In agricultural implements a good and growing trade is also reported, among other things the American spade finding special favor. There is evidently no national bias in the South African market, the best tool for the price being the favorite no matter where it comes from. It is this practical, good horse sense that keeps all English colonial markets from being exclusive. Merit counts, and where this is the rule, American hardware has a free market and fair treatment.

Ahead of the World.

SURPRISING results were obtained at a test of shells at the Indian Head proving ground lately, and if these shall be confirmed by further experiments, our navy, which already possesses the best armor plate in the world, will have by far the best armor-piercing shells, and both of American invention. What was done at the proving ground lately was to put a cast-steel shell of six inch calibre entirely through a seven-inch harveyized nickel-steel plate through the heavy oak backings and 12 feet into the bank of clay behind. This performance never has been equalled by any projectile of like calibre in the world.

When the Johnson shell slipped so easily through a plate of known high quality, the experts doubted the evidence before their own eyes, and immediately took steps to assure themselves that the result was not accidental. To this end, one of the Wheeler-Sterling shells, all steel-armor piercers of the best quality, and equal to the best European shell, was selected and fired at the same velocity at the same plate. It was smashed upon the face of the plate after a slight penetration, just what was expected from this calibre of shell when fired at a seven-inch plate.

Then another of the Johnson shells was placed in the gun and fired at the plate. The result was almost precisely the same as with the first shot. The plate was penetrated with the greatest ease, and the shot was almost unscathed. Further experiments will be made. There was a further test also at the proving grounds of the Iowa's barbette plate. It was attacked by 12-inch shell's, one a Wheeler-Sterling and the other a Carpenter, and resisted them successfully.

Subsequently the tests were continued, mainly with a view to determining the relative value of shots fired at high and low velocity. The same plate was used. The plate was fired at at a velocity of 2,100 feet per second with a Johnson shell, without a cap, but the point of the shell penetrated only about four inches, and then broke up and bounded to the rear. Three other shots were fired at the slow velocity of 830 feet per second. One was a Johnson shell with the cap of soft forged steel or wrought iron; the second a Wheeler-Sterling shell, uncapped, and the third a Johnson, uncapped. The results showed that with such velocity the shells were incapable of penetrating the plate to any extent.

Book Notice.

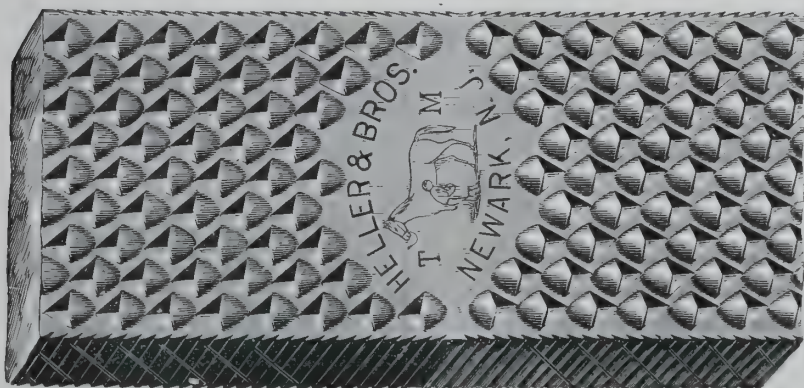
MR. JOSEPH M. WALSH, of Philadelphia, who is well known as an authority on coffee, its cultivation, preparation and commercial classification, has published what is considered by those who have studied the industry a standard work on that article. This publication is divided into ten chapters and covers the whole ground in a most instructive and lucid manner. Those who are in search of useful and accurate information on everything pertaining to coffee should send \$2 to the publisher for a copy of this book.

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To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry)...	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	21 1/4 inches.
Arobe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1.011 pounds.	do.....	Uruguay (double) ..	7.776 bushels.	do.....	China, Japan and Sumatra.	133 1/4 pounds.
Arroba (dry)...	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	Fanega (liquid)	Spain.....	16 gallons.	do.....	Philippine Islands	140 pounds.
do.....	Portugal.....	32.38 pounds.	Feddán.....	Egypt.....	1.03 acres.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Spain.....	25.36 pounds.	Frail (raisins)...	Spain.....	50 pounds.	do.....	Castilian.....	0.91407 foot.
do.....	Venezuela.....	25.4024 pounds.	Frasco.....	Argentine Republic	2.5066 quarts.	Pik.....	Turkey.....	27.9 inches.
Arroba (liquid).	Cuba, Spain and Venezuela.....	4.263 gallons.	Fuder.....	Mexico.....	264.17 gallons.	Pood.....	Russia.....	36.112 pounds.
Arshine.....	Russia.....	28 inches.	Garnice.....	Luxemburg.....	0.88 gallon.	Pund (pound)...	Denmark, Sweden.	1.102 pounds.
Arshine (s'qu're)	do.....	5.44 square feet.	Gram.....	Russian Poland ..	15.432 grains.	Quarter.....	Great Britain.....	8.252 bushels.
Artel.....	Morocco.....	1.12 pounds.	Hectare.....	Metric.....	2.471 acres.	do.....	London (coal)...	36 bushels.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.	Hectolitre:	do.....	2.838 bushels.	Quintal.....	Argentine Republic	101.42 pounds.
Barrel.....	Malta (customs)...	11.4 gallons.	Dry.....	do.....	26.417 gallons.	do.....	Brazil.....	130.06 pounds.
do.....	Spain (raisins)...	100 pounds.	Liquid.....	Austria-Hungary ..	1.422 acres.	do.....	Castile, Chile, Mex- ico and Peru.	101.61 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Joch.....	Japan.....	4 yards.	do.....	Greece.....	123.2 pounds.
Bongkal.....	India.....	832 grains.	Ken.....	Metric.....	2.2046 pounds.	do.....	Newfoundland (fish)	112 pounds.
Bonw.....	Sumatra.....	7.0965 s'qu're metres.	Kilogram (kilo)	do.....	0.621376 mile.	do.....	Paraguay.....	100 pounds.
Bu.....	Japan.....	0.1 inch.	Kilometre.....	Russia.....	216 cubic feet.	do.....	Syria.....	125 pounds.
Butt (wine)...	Spain.....	140 gallons.	Klafter.....	Japan.....	5.13 bushels.	do.....	Metric.....	220.46 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Kota.....	Russia.....	85.134 bushels.	Rottle.....	Palestine.....	6 pounds.
Candy.....	India (Bombay)...	529 pounds.	Korree.....	Belgium, Holland ..	82.52 bushels.	do.....	Syria.....	5 1/2 pounds.
do.....	India (Madras)...	500 pounds.	Last.....	England (dry malt)...	2 metric tons (4,480 pounds.)	Sagen.....	Russia.....	7 feet.
Cantar.....	Morocco.....	113 pounds.	do.....	Germany.....	112.29 bushels.	Salm.....	Malta.....	490 pounds.
do.....	Syria (Damascus)...	575 pounds.	do.....	Prussia.....	11 1/2 bushels.	Se.....	Japan.....	3.6 feet.
do.....	Turkey.....	124.7036 pounds.	do.....	Russian Poland.....	4.760 pounds.	Seer.....	India.....	1 pound 13 ounces.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Spain (salt).....	4.633 acres.	Shaku.....	Japan.....	10 inches.
Carga.....	Mexico and Salvador	300 pounds.	League (land)...	Paraguay.....	2.115 feet.	Sho.....	do.....	1.6 quarts.
Catty.....	China.....	1.333 1/4 (1 1/4) pounds.	Li.....	China.....	7.100 grains (troy).	Standard (St. Petersburg)...	Lumber measure...	165 cubic feet.
do.....	Japan.....	1.31 pounds.	Libra (pound)...	Castilian.....	1.0127 pounds.	Stone.....	British.....	14 pounds.
do.....	Java, Siam, Malacca	1.35 pounds.	do.....	Argentine Republic	1.043 pounds.	Suerte.....	Uruguay.....	2,700 cuadras (see cua- dra).
do.....	Sumatra.....	2.12 pounds.	do.....	Central America.....	1.014 pounds.	Tael.....	Cochin China.....	590.75 grains (troy).
Centaro.....	Central America.....	4 2/3 gallons.	do.....	Chile.....	1.0161 pounds.	Tan.....	Japan.....	0.25 acre.
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Mexico.....	1.0143 pounds.	do.....	do.....	2 pecks.
do.....	Darmstadt.....	110.24 pounds.	do.....	Peru.....	1.011 pounds.	Ton.....	Space measure ..	40 cubic feet.
do.....	Denmark, Norway ..	110.11 pounds.	do.....	Portugal.....	1.0143 pounds.	Tonde (cereals)	Denmark.....	3.94783 bushels.
do.....	Nuremberg.....	112.43 pounds.	do.....	Uruguay.....	1.0161 pounds.	Tondeland.....	do.....	1.36 acres.
do.....	Prussia.....	113.44 pounds.	do.....	Venezuela.....	1.0567 quarts.	Tsubo.....	Japan.....	6 feet square.
do.....	Sweden.....	98.7 pounds.	Litre.....	Greece.....	1.1 pounds.	Tsun.....	China.....	1.41 inches.
do.....	Vienna.....	123.5 pounds.	do.....	Guiana.....	1.0791 pounds.	Tunna.....	Sweden.....	4.5 bushels.
do.....	Zollverein.....	110.24 pounds.	do.....	England (timber)...	Sq're, 50 cubic feet; unbewn, 40 cubic feet; inch planks, 600 superficial feet.	Tunnland.....	do.....	1.22 acres.
do.....	Double or metric ..	220.46 pounds.	do.....	Manzana.....	1 1/2 acres.	Vara.....	Argentine Republic	34.1208 inches.
Chih.....	China.....	14 inches.	do.....	Marc.....	0.507 pound.	do.....	Castile.....	0.91417 yard.
Coyan.....	Sarawak.....	3,098 pounds.	do.....	Maund.....	82 1/2 pounds.	do.....	Central America ..	38.874 inches.
do.....	Siam (Koyan).....	2,667 pounds.	do.....	Metre.....	39.37 inches.	do.....	Chile and Peru.....	33.367 inches.
Cuadra.....	Argentine Republic	4.2 acres.	do.....	Mil.....	4.68 miles.	do.....	Cuba.....	33.384 inches.
do.....	Paraguay.....	78.9 yards.	do.....	do.....	4.61 miles.	do.....	Curaçao.....	33.375 inches.
do.....	Paraguay (square) ..	8.077 square feet.	Morgen.....	Prussia.....	0.63 acre.	do.....	Mexico.....	33 inches.
do.....	Uruguay.....	Nearly 2 acres.	Oke.....	Egypt.....	2.7225 pounds.	do.....	Paraguay.....	34 inches.
Cubic metre.....	Metric.....	35.3 cubic feet.	do.....	Greece.....	2.84 pounds.	do.....	Venezuela.....	33.384 inches.
Cwt. (hundred- weight.)	British.....	112 pounds.	do.....	Hungary.....	3.0817 pounds.	Vedro.....	Russia.....	2.707 gallons.
Dessiatine.....	Russia.....	2.6997 acres.	do.....	do.....	do.....	Verges.....	Isle of Jersey.....	71.1 square rods.
do.....	Spain.....	1.599 bushels.	do.....	do.....	do.....	Verst.....	Russia.....	0.663 mile.
Drachme.....	Greece.....	Half ounce.	do.....	do.....	do.....	Vlocka.....	Russian Poland ..	41.98 acres.
Dun.....	Japan.....	1 inch.	do.....	do.....	do.....			
Egyptian wts. and measures.	(See CONSULAR RE- PORTS No. 144.)		do.....	do.....	do.....			
Fanega (dry)...	Central America ..	1.5745 bushels.	do.....	do.....	do.....			

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes—ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.

Length.	Surface.	Capacity.	Weight.	Notation.
Myriametre.....			Metric ton.....	1,000,000
Kilometre.....			Quintal.....	100,000
Hectometre.....			Myriagram.....	10,000
Decametre.....			Kilogram.....	1,000
METRE.....			Hectogram.....	100
Decimetre.....			Decagram.....	10
Centimetre.....			GRAM.....	1
Millimetre.....			Decilitre.....	0.1
			Centilitre.....	0.01
			Milligram.....	0.001

EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.

1 kilometre.....	0.62137 mile.	1 mile.....	1.60935 kilometres.
1 metre.....	3.28083 feet.	1 yard.....	0.91402 metre.
1 centimetre.....	0.3937 inch.	1 foot.....	0.304801 metre.
1 hectare.....	2.471 acres.	1 inch.....	25.4001 millimetres.
1 are.....	119.6 square yards.	1 square mile.....	2.59 square kilometres.
1 metric ton.....	2,204.62 pounds.	1 acre.....	0.4047 hectare.
1 kilogram.....	2.2046 pounds.	1 square foot.....	9.29 square decimetres.
1 gram.....	15.43236 grains.	1 pound.....	0.453 9 kilogram.
1 hectolitre.....	2.8377 bushels.	1 grain.....	64.7989 milligrams.
1 hectolitre.....	26.417 gallons.	1 bushel.....	0.35239 hectolitre.
1 litre.....	1.0567 quarts.	1 gallon.....	3.78543 litres.
1 stere.....	1.308 cubic yards.	1 cubic foot.....	0.02832 cubic metre.

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.
Millimetres $\times 25.4$ = inches.
Centimetres $\times 0.3937$ = inches.
Centimetres $\times 2.54$ = inches.
Metres $\times 39.37$ = inches. (Act Congress.)
Metres $\times 3.281$ = feet.
Metres $\times 1.094$ = yards.
Kilometres $\times 0.621$ = miles.
Kilometres $\times 1.6093$ = miles.
Kilometres $\times 3.2807$ = feet.
Square millimetres $\times 0.0155$ = sq. inches.
Square millimetres $\times 645.1$ = sq. inches.
Square centimetres $\times 0.155$ = sq. inches.

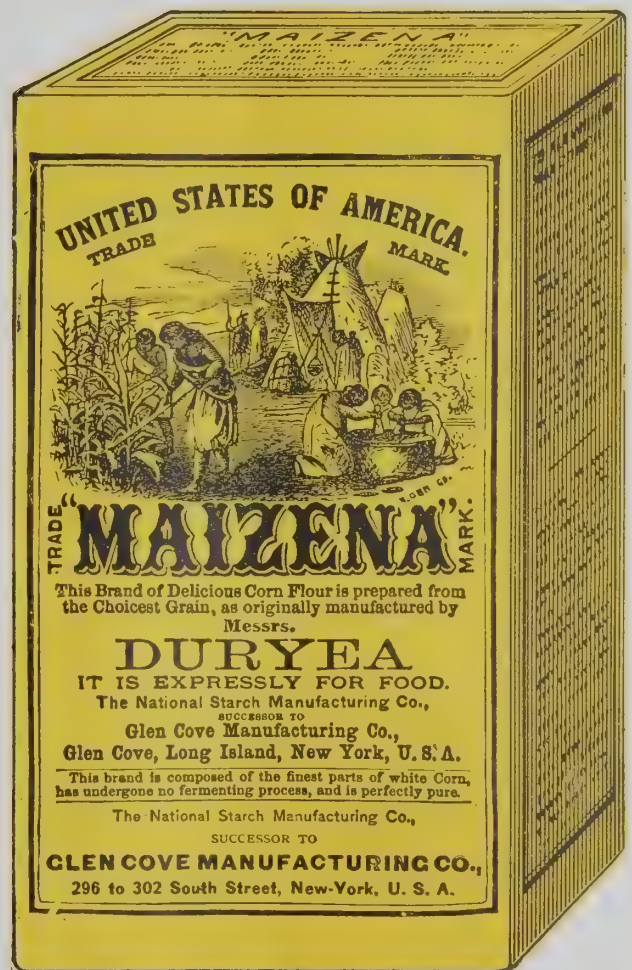
Square centimetres $\times 6.451$ = sq. inches.
Square metres $\times 10.764$ = sq. feet.
Square kilometres $\times 247.1$ = acres.
Hectare $\times 2.471$ = acres.
Cubic centimetres $\times 16.383$ = cubic inches.
Cubic centimetres $\times 3.69$ = fl. drams.
Cubic centimetres $\times 29.57$ = fluid oz. (U. S. P.)
Cubic metres $\times 35.315$ = cubic feet.
Cubic metres $\times 1.308$ = cubic yards.
Cubic metres $\times 264.2$ = gallons (231 cu. in.)
Litres $\times 61.022$ = cubic in. (Act Congress.)
Litres $\times 33.84$ = fluid ounces (U. S. Phar.)
Litres $\times 0.2642$ = gallons (231 cu. in.)
Litres $\times 3.78$ = gallons (231 cu. in.)

Litres $\times 28.316$ = cubic feet.
Hectolitres $\times 3.531$ = cubic feet.
Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)
Hectolitres $\times 0.131$ = cubic yards.
Hectolitres $\times 26.42$ = gallons (231 cu. in.)
Grams $\times 15.432$ = grains. (Act Congress.)
Grams $\times 981$ = dynes.
Grams (water) $\times 29.57$ = fluid ounces.
Grams $\times 28.35$ = ounces avoirdupois.
Grams per cu. cent. $\times 27.7$ = lbs. per cu. in.
Joule $\times 0.7373$ = foot pounds.
Kilograms $\times 2.2046$ = pounds.
Kilograms $\times 35.3$ = ounces avoirdupois.
Kilograms $\times 1,102.3$ = tons (2,000 lbs.)

Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Kilogram-metres $\times 7.233$ = foot lbs.
Kilo per metre $\times 0.672$ = lbs. per foot.
Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Kilo per cheval $\times 2.235$ = lbs. per H. P.
Kilowatts $\times 1.34$ = horse-power.
Watts $\times 746$ = horse-power.
Watts $\times 0.7373$ = foot pounds per second.
Calorie $\times 3.968$ = B. T. U.
Cheval vapeur $\times 0.9863$ = horse-power.
(Centigrade $\times 1.8$) $\div 32$ = degree Fahrenheit.
Franc $\times 0.193$ = dollars.
Gravity Paris = 980.94 centimetres per sec.

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(DURYEA)



A BRAND OF CORN FLOUR.
NUTRITIOUS. DELICIOUS.

ABSOLUTELY PURE.

A DELIGHTFUL TABLE DELICACY.

The above represent the Style of Packets in which "MAIZENA" is put up. Each Packet has recipes for its use on the wrapper.

(SEE OTHER SIDE.)

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It is especially adapted to use in warm climates, being light and easily digested.

For **Blanc Mange, Ice-Cream, Custards, Puddings**, as dessert, and as an ingredient used in **Omelets, Soups, Gravies, Sauces, etc.**, it is **unequaled**.

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" " HAMBURG, . . .	1863
" " PARIS, . . .	1867
" " LONDON, . . .	1867
" " BRUSSELS, . . .	1876
CENTENNIAL " PHILADELPHIA, .	1876
EXPOSITION, PARIS, . . .	1878
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"Notably Excellent."

AT PARIS EXPOSITION, 1867,
"Perfect Preparation."

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AT PARIS EXPOSITION, 1878,
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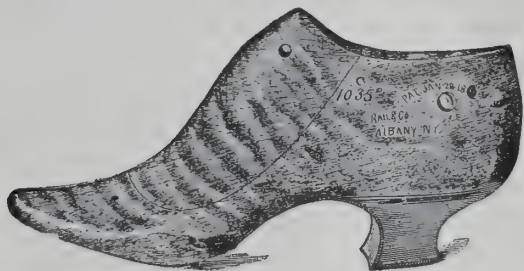
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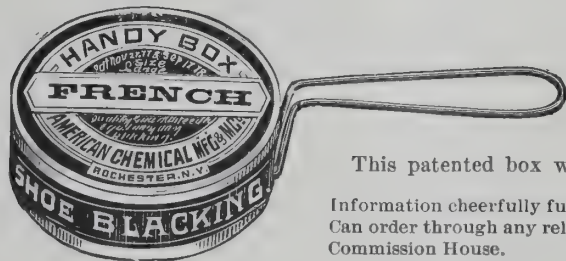
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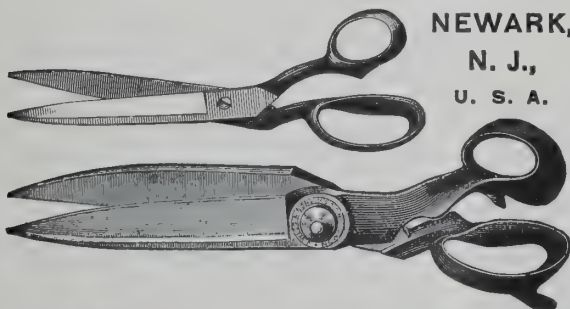
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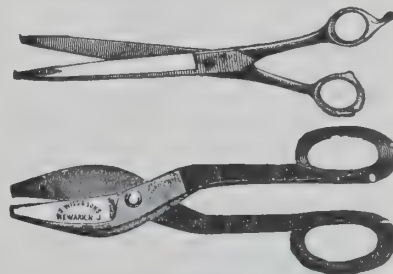
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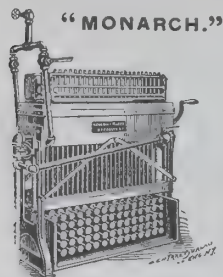
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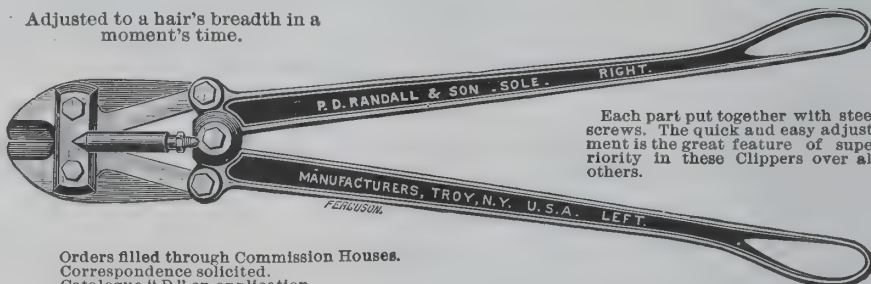
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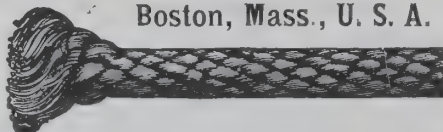


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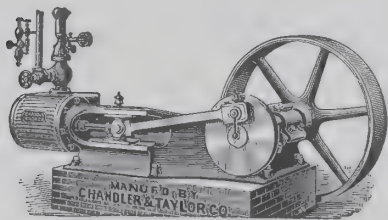
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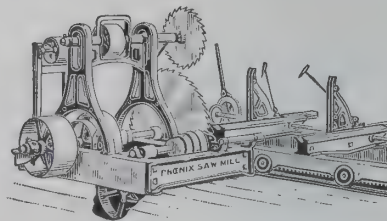
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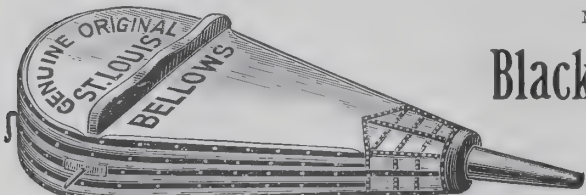
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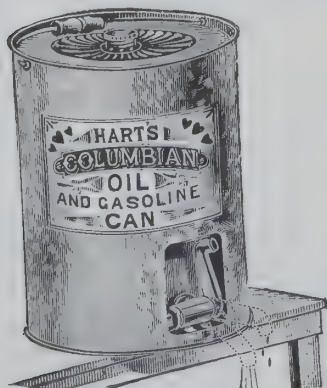
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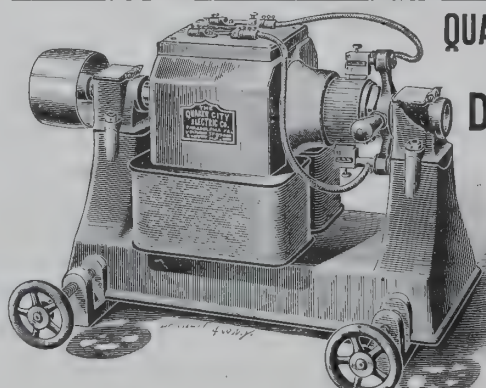
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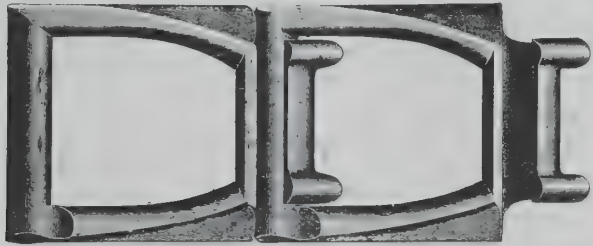
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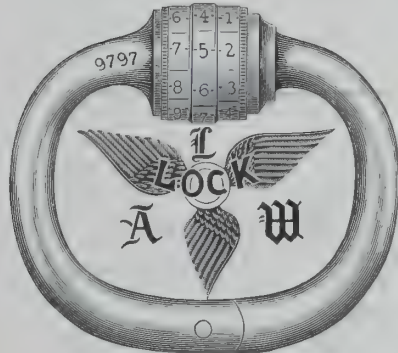
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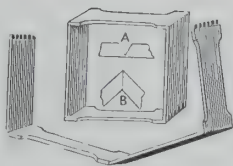
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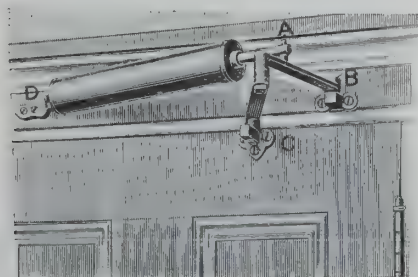
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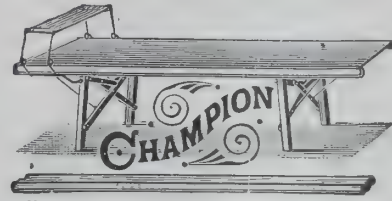
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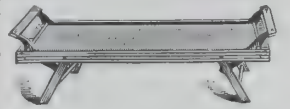


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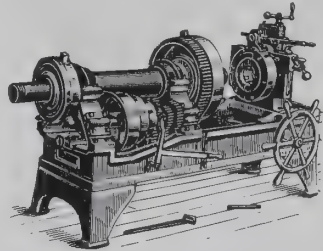
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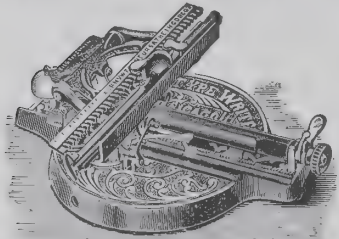


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ODELL'S NEW METHOD TYPEWRITER,

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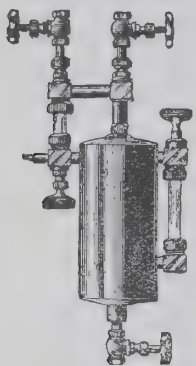
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FEEDS KEROSENE OIL BY THE DROP.

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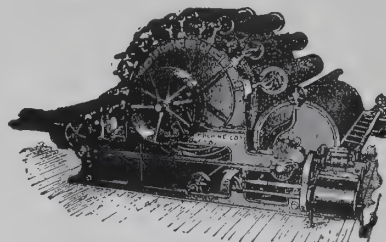
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Built in the Most Substantial Manner.

SIMPLE. Can be used for DURABLE.

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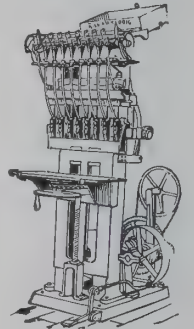
No weight or spring on treadle to tire the operator. Will nail cigar and other small boxes. Bottoms can be nailed on in two revolutions.

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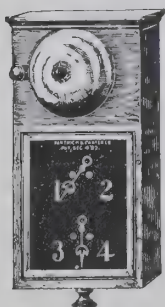
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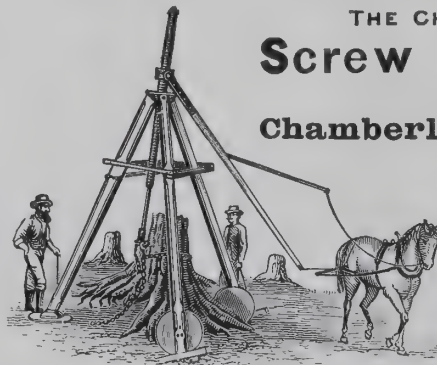


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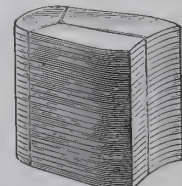
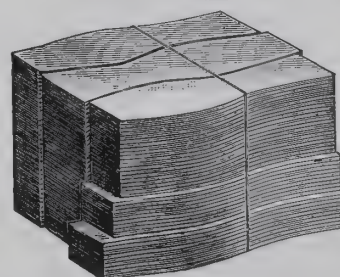
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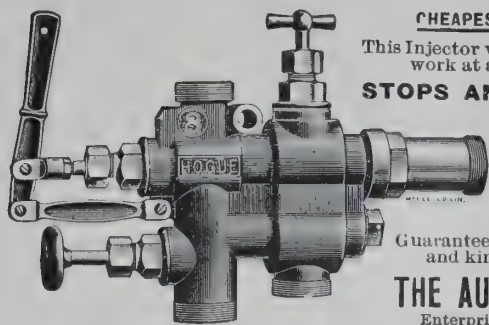


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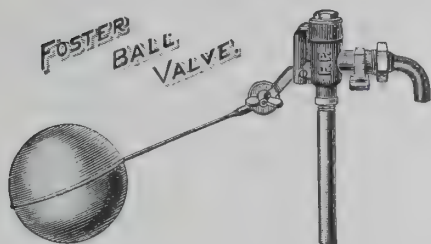
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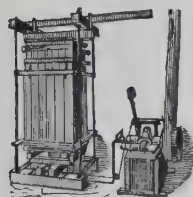
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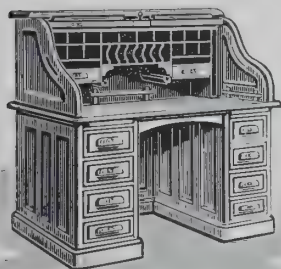
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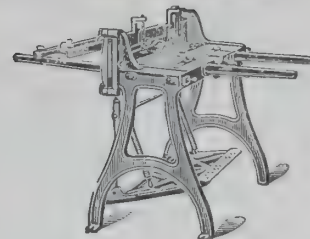
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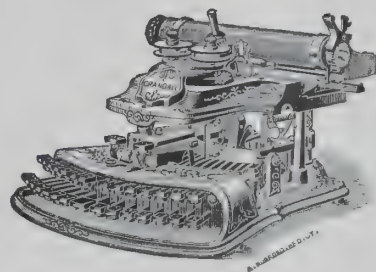
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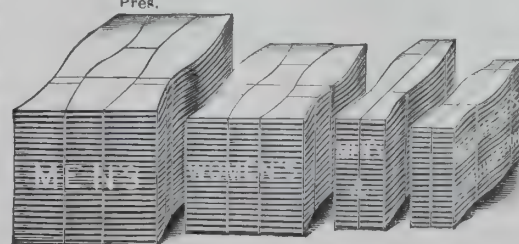
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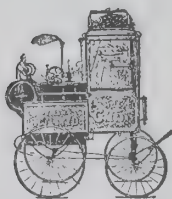
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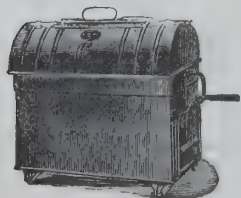
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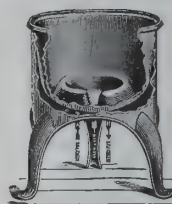
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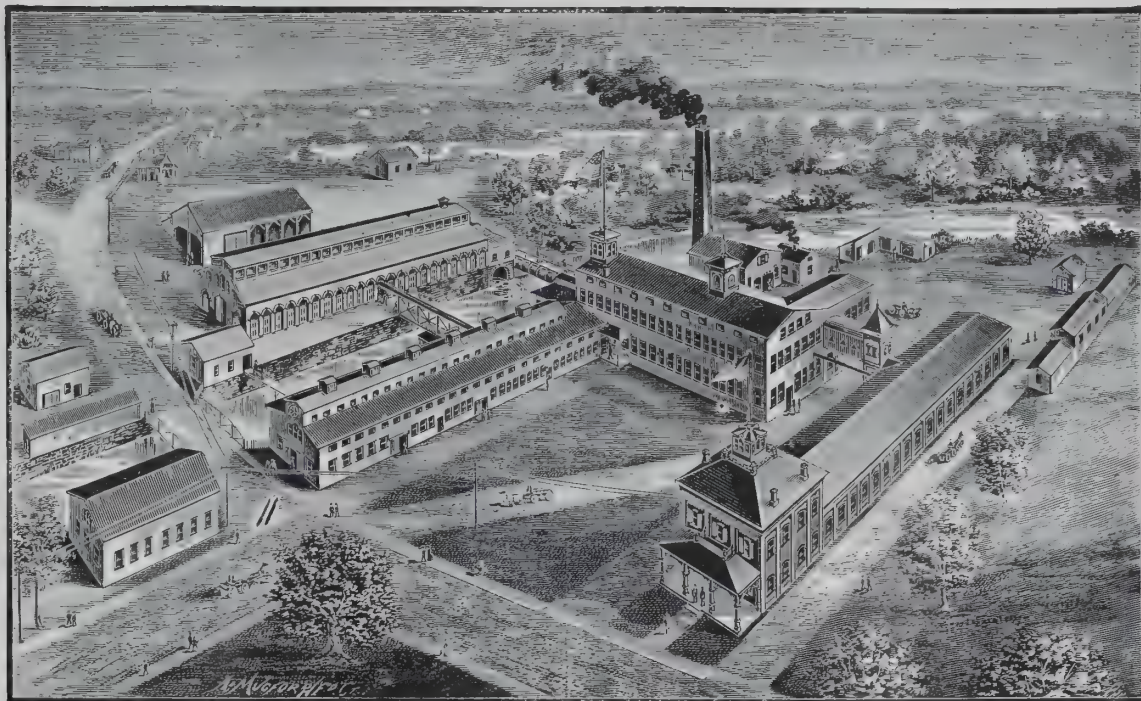
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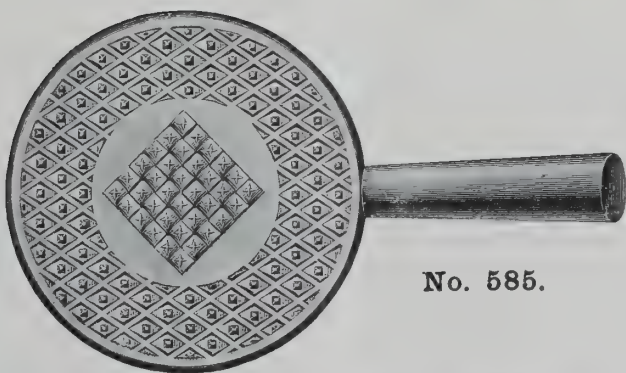


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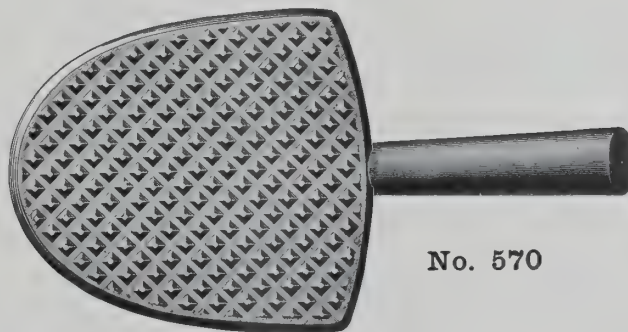


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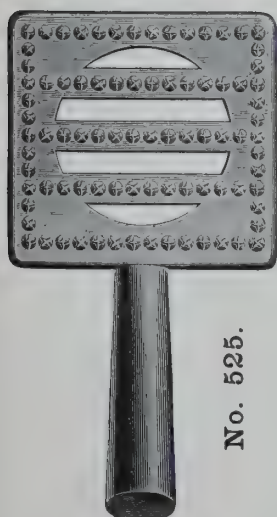
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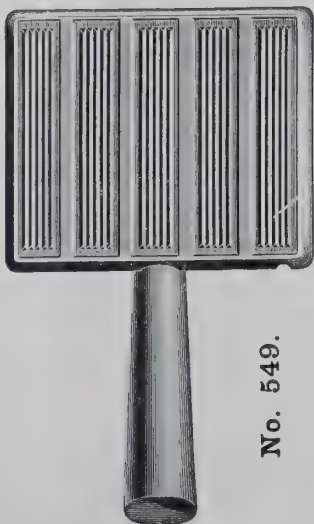
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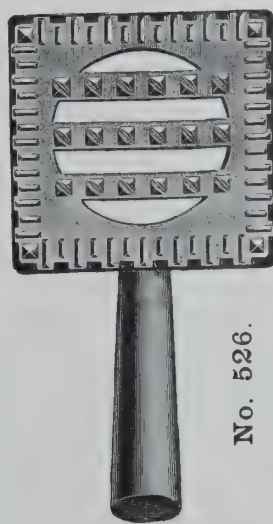
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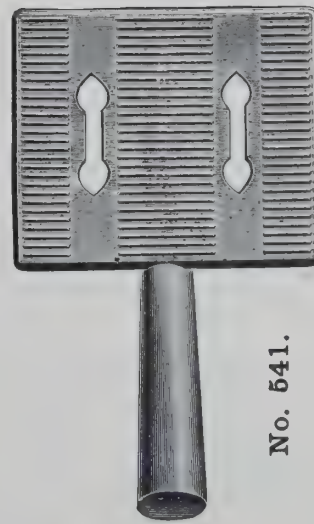
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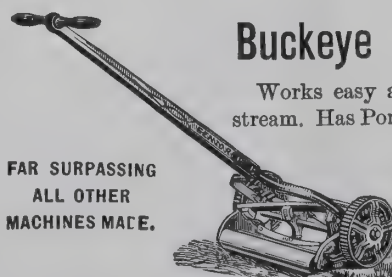
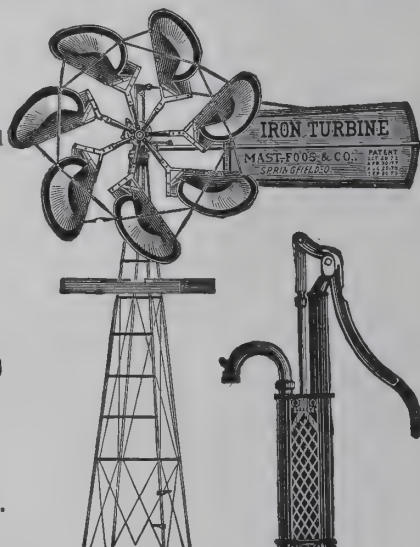
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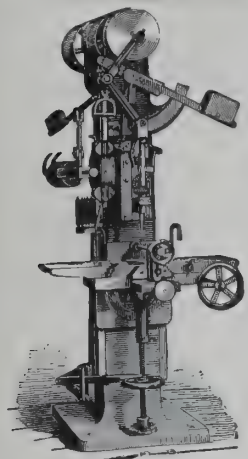
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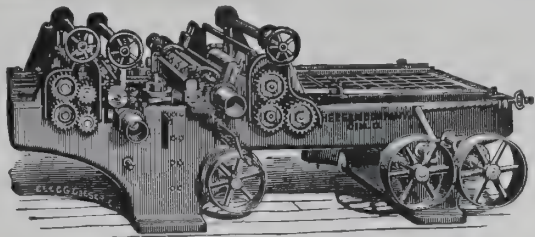
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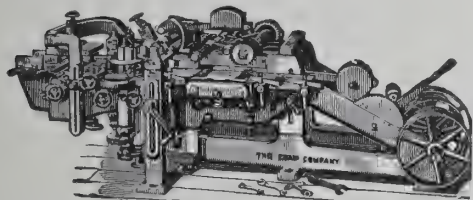


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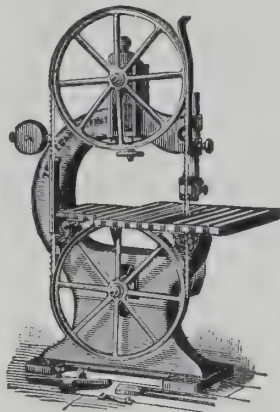


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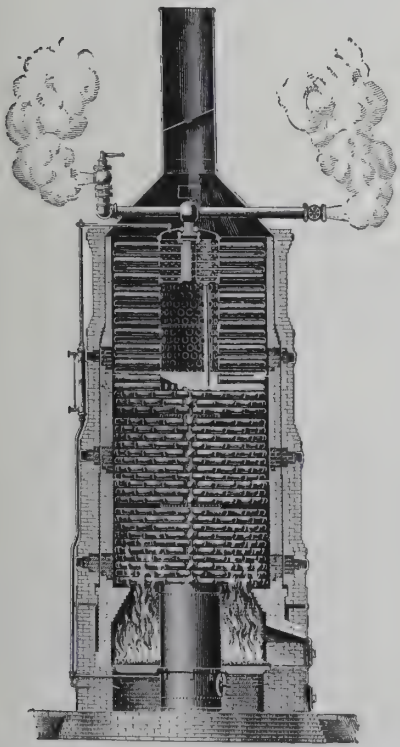
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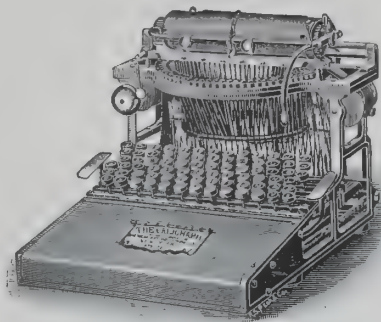
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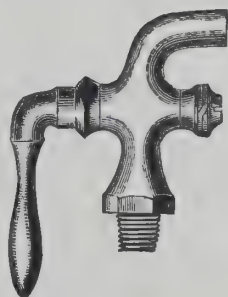
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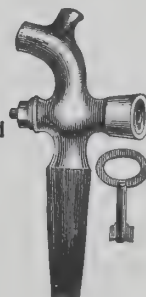
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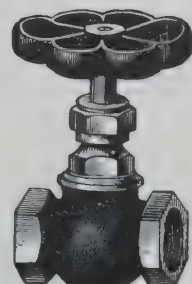
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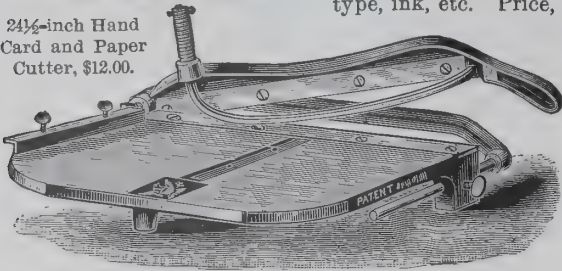
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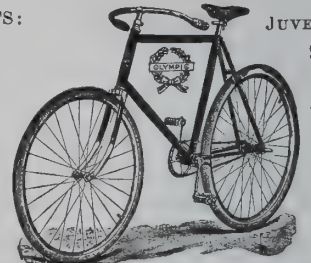
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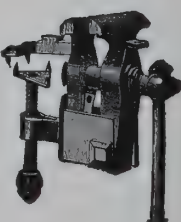
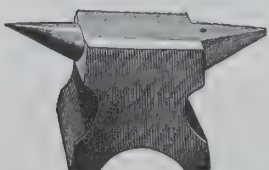
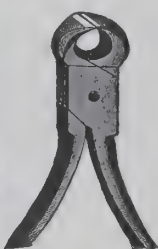
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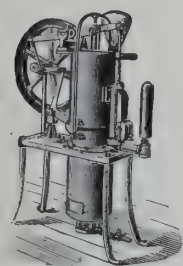
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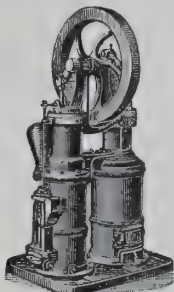
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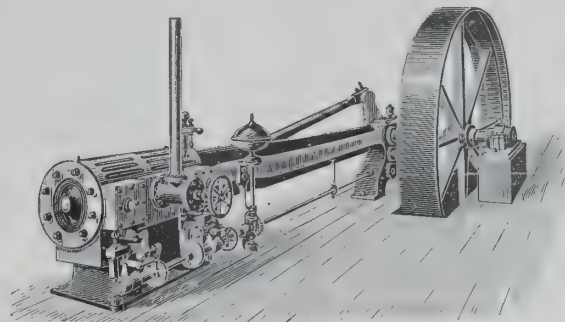
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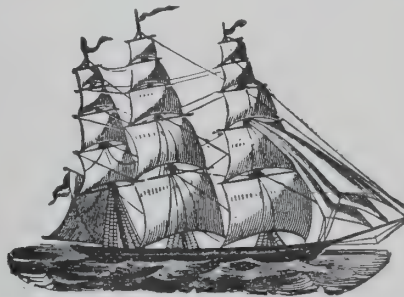
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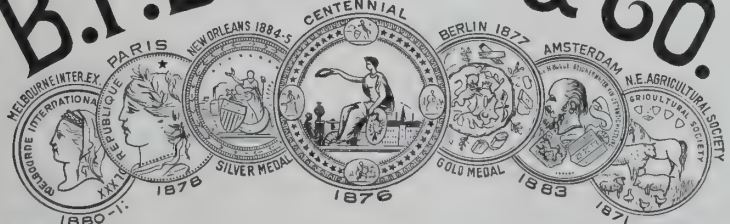
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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	De Lamater Iron Works—Hot-Air Pumping Engines..... 7
American Chemical Mfg. & Mining Co.—Shoe Blacking..... 39	De Laval Separator Co.—Cream Separators..... 35
American Lamp & Brass Co.—Lamps.. 8	Diago, Frederico C..... —
American Clock Co.—Cyclometers..... 43	Dietz, R. E. Co.—Lamps..... 21
American Writing Machine Co.—Calligraph..... 5	Diamond Hardware Co.—Stove Polishing Mitten..... 31
Armitage-Herschell Co.—Steam Riding Gallery..... 45	Dodd & Williams—Cut Soles and Leather Donegan & Swift—Engines, Injectors, etc..... 47
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 33
Automatic Injector Co.—Boiler Injectors..... 45	Doig, W. S.—Box Nailing Machines..... 44
Ayer, J. C. Co.—Patent Medicines..... 25	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc..... 33
Ball & Co., Dayton—Shoe Lasts..... 39	Douglas, W. & B.—Pumps, etc..... 4
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Dry Kalsomine & Fresco Paint Works..... 23
Barnett Co., G. & H.—Files..... 21	Eagle Cotton Gin Co.—Cotton Gins.... 31
Barton Mfg. Co.—Rubber Stamp Outfits..... 43	Eclipse Cement & Blacking Co..... 41
Baxter Register Co.—Cash Registers... 35	Eco Magnetic Clock Co.—Electric Clocks..... 46
Baxter, Schenkelberger & Co.—Cut Soles..... 31	Electric Emery Wheel Co..... 46
Bay State Cut Sole Co..... 45	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Biguall & Keeler Mfg. Co.—Pipe Threading and Cutting Machines... 44	Falls Rivet & Machine Co.—Pulleys, Shafting, etc..... 37
Blanchard Machine Co.—Disintegrators 21	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Brewer Longitudinal Axle Lubricator Co..... 39	Faxon & Co.—O. J. Bicycles..... 23
Brown & Co., B. F.—Shoe Dressing..... 7	Flagg Mfg. Co.—Shoe Machinery..... 35
Buffalo Cycle Co.—Bicycles..... 33	Foster Mfg. Co., F. W.—Ball Cocks.... 45
Buffalo Portable Steel House Co..... 46	Fulton Iron Works—Sugar Cane Mills 26
Burgess, Edward A.—Box Nailing and Trimming Machines..... 46	Furbush & Son Machine Co., M. A..... 44
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 45	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 25
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 35	General Electric Co.—Electrical Machinery..... 16
Chamberlin Bros. Co.—Stump Pullers... 44	Gillie, Goddard & Co.—Carousels.... 46
Chambers Bros. Co.—Bolt Clippers..... 46	Globe Buffer Co.—Shoe Machinery..... 35
Chandler & Taylor Co.—Steam Engines and Boilers..... 37	Goderich Organ Co.—Organs, Stools, etc..... 45
Chicago Metal Stamping Co..... 43	Goubert Mfg. Co..... 16
Christen & Sons, F.—Bellows..... 43	Gould Packing Co.—Steam and Water Packing..... 23
Collins Plow Co.—Plows, Hay and Straw Presses, etc..... 29	Goulds Mfg. Co.—Pumps of all kinds... —
Columbus Phaeton Co..... 41	Gout Mfg. Co., David D. A..... —
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 41	Green Bros.—Watchmakers' and Jewelers' Tools and Supplies..... 6
Cornell & Co., F. H.—Boiler Oil Injector 44	Hancock Inspirator Co.—Boiler Feeders 47
Crandall Machine Co.—Typewriters.... 45	Harrington & King Perforating Co.—Mining Screens... 25
Cretors & Co., C.—Peanut Roasters.... 46	Hart Mfg. Co.—Faucet Can..... 43
Crosby Steam Gage and Valve Co.—Safety and Water Valves..... —	Hartshorn Co., Stewart—Shade Rollers 2
Cunningham Mfg. Co.—Desiccated Egg Food..... 45	Hastings & McIntosh Truss Co..... 31
Deane Steam Pump Co.—Steam Pumps 33	Hathaway, C. L. & Sons—Shoe Dressing..... 48
Dederick, P. K. & Co.—Agricultural Implements..... 43	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 5
Densmore Typewriter Co..... 31	Hazelton Boiler Co..... 5
De la Balze Hermanos..... —	Heller & Bros.—Files, Rasps, etc..... 35
	Holmes & Edwards Silver Co.—Spoons and Forks..... 6
	Horrocks Desk Co..... 45

PAGE	PAGE
Houchin & Huber—Soap and Candle Machinery..... 37	Porter, H. K.—Bolt Clippers..... 39
Huntley Mfg. Co.—Flour Mill Machinery..... 31	Premier Pen Co.—Fountain Pens..... 31
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 43	Pulver & Sons, Peter—Lubricating Compound..... 25
James & Co., George—Soles, Taps, Heels, etc..... 44	Quaker City Electric Co.—Dynamos and Motors..... 43
Jeffrey Mfg. Co.—Detachable Chain Belting..... 46	Randall & Son, P. D.—Bolt Clippers... 37
Jenkins Bros.—Packings..... 23	Rhyder, W. J.—American Commercial Agency..... 41
Kalamazoo Railroad Velocipede & Car Co..... 48	Root Co., A. I.—Beekeepers' Supplies.. 43
Kearns & Rudolph Range Co..... 43	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 33
Kelly Axe Mfg. Co.—Axes..... 41	Samson Cordage Works—Cords of all kinds..... 21
Kelsey & Co.—Printing Presses..... 6	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Keystone Mfg. Co.—Agricultural Implements..... 26	Schack, W. G.—Bicycles..... 44
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Schamandandian, D..... —
Layman Pneumatic Boat and Sporting Goods Co..... 41	Schollhorn Co., Wm.—Shears and Scissors..... 23
Leffel, Jas. & Co.—Water Wheels and Steam Engines..... 16	Schrader's Son, A.—Diving Apparatus. 46
Lidgerwood Mfg. Co.—Hoisting Engines 35	Seymour Cutlery Co., Henry—Shears and Scissors..... 41
Marston & Co., J. M.—Foot and Hand Power Saws..... 35	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
Martin & Co., W. E.—Shoe Dressing... 45	Silver Lake Co.—Braided Cordage..... 37
Mast, Foss & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 4	Simonds Mfg. Co.—Saws..... 35
McCammon Piano Co..... 21	Slatington-Bangor Slate Syndicate—Roof Slate..... 46
McGarigle, Thos. E.—Rock Drills..... 46	Smith & Co., H. D.—Carriage Hardware. 8
Miller Co., The E. L.—Paper Cutters... 25	Standard Hammock Mills..... 46
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Standard Tool Co.—Twist Drills, etc... 23
Monarch Cycle Co.—Bicycles..... 8	Stanley Works, The—Brackets..... 21
Mooney & Sons, W. W.—Tanners and Curriers..... 15	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 4
Morris European and American Express Co..... 45	St. Joseph Pump Mfg. Co.—Water Elevator..... 7
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 41	Stieltjes & Co., P.—Importers..... 43
Myers, S. F. & Co.—Jewelry of all kinds 6	Stubbs' Mercantile Agency..... —
National Meter Co.—Water Meters.... 19	Sturtevant Co., B. F.—Pressure Blowers 47
National Starch Mfg. Co.—Maizena.... 29	Sweinhard Co., V. H.—Combination Locks..... 41
New Jersey Paint Works—Copper Paint, etc..... 25	Talbot & Co., W. E.—Brick Machinery 46
New Process Twist Drill Co..... 23	Tanite Co., The—Emery Wheels, Whetstones, etc..... 46
New York City Peanut Roaster Works 46	Tarr, James H.—Copper Paint..... 7
Niagara Stamping and Tool Co.—Tools and Machinery for Tinsmiths and Sheet Metal Workers..... 45	Thomson Meter Co.—Water Meters... 48
Nicholson File Co.—Files..... 21	Thresher Electric Co.—Electrical Machinery..... 15
Norman & Evans—Steam Merry-go-rounds..... 46	Tubular Rivet & Stud Co..... 47
Oberne & Co., Geo.—Leather Supplies.. 46	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 21
Odell Typewriter Co.—Typewriters... 44	Union Sand Paper & Emery Wheel Co.. 33
Osborne & Co., C. S.—Saddle and Harness Tools..... 46	U. S. Buggy & Cart Co.—Wagons and Carriages..... —
Partrick & Carter Co.—Electrical Supplies..... 44	U. S. Playing Card Co..... 2
Pelton Water Wheel Co..... 2	Vetter, F.—Typewriter Desks, etc.... 44
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	Wagen, John F.—Importer..... 39
Philadelphia Scoop Co..... 46	Waterous Engine Works Co.—Saw Mill Machinery..... 19
Plume & Atwood Mfg. Co.—Lamps.... 15	Weber Gas & Gasoline Engine Co..... 23
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 7	Weston Electrical Instrument Co.—Electrometers..... 41

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to *originate trade*, and not to *execute orders*, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

It does not take goods in exchange for advertising space.

It does not employ the purchasing power of commission merchants and shippers to influence patronage.

NOTICE TO ADVERTISERS.

We desire it distinctly understood by our customers and those who contemplate making use of our publications, THE AMERICAN EXPORTER and EL EXPORTADOR AMERICANO, that space in these journals for advertising purposes is sold only upon the merits of the publications—for that purpose. For this reason, no advertising solicitor or agency has any right, or authority, to agree to perform any special service whatever to obtain orders for advertising.

We make it a practice not to discuss the merits or demerits of other export trade papers. Comments on their value may be made with more propriety by those advertisers who have had experience in the use of such publications.

THE JOHN C. COCHRAN CO.

NEGLECTED PROFIT-PRODUCING AGENCIES.

BUSINESS men frequently adopt an untrue formula for expressions regarding certain business agencies which tend to narrow their views or to cause them to follow unwise courses of action. The truth of this statement will be clearly seen by any business man if he will closely analyze the expressions he uses and their influence on his actions regarding the exterior profit-producing agencies of commerce, such as transportation companies that bring him material and take his products to markets where they may be sold; insurance companies that protect him against loss of property; printers, who supply the means by which he can make buyers acquainted with what he has to offer them; accomplished salesmen, who personally represent his interests and clearly demonstrate to the satisfaction of buyers the advantages to be gained by buying what he has to sell, and publishers of trade journals, that outstrip all other agencies in carrying a knowledge of his establishment and his creations far beyond the limits of his personal acquaintance. The cost of the services rendered by all of these agencies is almost invariably spoken of as an *expense*. These services are a part of the cost of business, exactly as material purchased and wages paid are a part of the cost of production, and in no different sense. If a manufacturer should stop all cost when his products are finished and packed ready for shipment, they would simply remain forever in his packing-room. He not only would never see a profit from them, but he would never again handle the value invested in them.

One of the most frequent causes of failures is the fact that men who clearly know how to invest capital in erecting manufacturing plants, providing machinery, procuring material and managing workmen, arrive at the conclusion that with these things done investments end, and all beyond that is *expense*, which must be hampered and cut down to the lowest notch if money is to be made.

Such men need to learn the broad lesson that although they personally own and control their business, they are not the only ones interested in it. Every transportation company that may handle its incoming or outgoing freight; every salesman, commission agent, exporter and foreign importer, merchant and consumer; every printer and publisher who may in any way get business or benefits for themselves through helping him to get business, has an interest in his business as valid and vital as his own. The success of one means the success of all. If a profit is produced, the price paid for any or all of the services necessary for its production cannot be properly classed as an "expense." The often-repeated remark that "an increase of expense cannot be afforded" is not a true statement.

The problem is how best to invest in selling force in order to make the investment in productive force profitable. The secret of success is found in the skill with which every agency that necessarily intervenes between producer and consumer is utilized for the creation and effective management of the business. Every person interested in these agencies is a partner as vitally interested in the success of the manufacturer's business as he is himself.

THE PROFIT-PRODUCING SERVICES OF "THE AMERICAN EXPORTER."

All manufacturers will admit that orders for their goods cannot originate with buyers who have no knowledge of them. Things of which a person has no knowledge, so far as he is concerned, have no existence. The first step toward originating orders is to make buyers acquainted with the fact that the manufacturer has an existence, where he is located and what he is manufacturing. For all foreign countries this introduction may be effected through the pages of THE AMERICAN EXPORTER at a less cost, price paid and service rendered being fairly considered, than in any other way. All other agencies may be skillfully utilized; the illustrated catalogue, the export commission merchant, the foreign importer and merchant and the travelling salesman, but none, nor all of them, can take its place, nor will their services be as profitable as they would be if THE AMERICAN EXPORTER be also employed. Its work is to scatter seed far and wide, so that no portion of the earth may be left unfruitful. It prepares the way for the services performed

by all other agencies, making the work done by them more effective. Every agency that experience has demonstrated to be profitable in building up a world-wide trade is helped by it. It not only scatters seed, it fertilizes and cultivates the soil, and thus contributes an increased harvest through whatever means may be employed to gather it in.

Speaking with entire accuracy, THE AMERICAN EXPORTER is the silent partner or selling agent of every manufacturer who is engaged in producing an exportable commodity. It says to all manufacturers of this class, "The service we render will bring you a profit if you will employ it long enough to let it produce results in a natural way." When THE AMERICAN EXPORTER contracts to make a manufacturer, his location, the nature of his establishment and products known to buyers in every market of the world, its purpose is to assist that manufacturer to make profitable his investment for manufacturing, and his investment in all distributing and selling services. That it has succeeded in doing this for those who have contracted with it and sustained the effort a sufficient time to permit the seed sown to become fruitful, is attested by the large number of prosperous manufacturers who have, guided by good judgment and satisfactory experience, continued to employ its service without a hiatus for a long term of years. The most profitable contract THE AMERICAN EXPORTER can make with an advertiser is one that will produce a profit for him. Upon that fact, and its uniform rule of one price for all advertisers under similar conditions, the stability of its usefulness is founded. So well is this understood by buyers in foreign countries that they have come to regard the continued appearance of an advertisement in its columns as an evidence of the stability of the advertiser. Perhaps no other single trade publication represents so large a number of first-class concerns. An examination of its advertising pages will show that this statement is well founded.

AMERICAN EXPORTS STILL INCREASING.

THE Bureau of Statistics of the United States Treasury Department has furnished returns which show that the exports of American manufactures are now increasing more rapidly than at any former period. For the month of March, 1896, the value of manufactured exports reached the unprecedented total of \$19,125,785. For the first two months of the year the exports were \$36,000,000. At the rate for the first quarter the exports for the year will be \$220,000,000. For 1892 they were but \$128,000,000. While this showing is one on which American labor and capital may reasonably base hopes of an increasing prosperity, it is no less a cause of congratulation to all importers of American manufactures. If the business is profitable to producers it must be profitable to importers who handle it in foreign countries.

INTERNATIONAL COMPETITION.

EVERY country possesses special fitness for the production of certain commodities. The conditions that create this special fitness limit competition in the production of such articles to the localities where they may be made and the persons engaged in such vocations. It is true, however, that a large majority of the commodities that make up the vast volume of international commerce, so far as natural conditions are factors of production, can be produced in many, if not in all, countries. In the production of such commodities international competition gives life and direction to international commerce. In a contest of this magnitude each nation finds all others working against it, in expressions of national policy, and each manufacturer is called upon to contend with all others in the same industry in his own and other countries. Such a contest develops sagacity and power to the highest degree. The victory is always won by those who have best command of natural resources, capital and labor and whose operations are least taxed or interfered with by the governments under which they manufacture or exercise jurisdiction over their customers.

International competition induces a universal effort to reduce

cost. This applies not alone to the incidence of the factory, but to all factors affecting the cost of securing material to be manufactured—the cost of making sales and delivering the finished products. Cost of production and delivery are not, however, the determining considerations that award an order to one competitor or another.

All considerations determining a transaction must be gathered up and condensed in one expression—price.

Two things being equal, price determines the action of the buyer. Differences in quality, style and utility are equalized by considering the difference in price. The buyer cares nothing about the cost of production and delivery to the seller. The seller's price is the buyer's cost. The difference between cost to the seller and price to the buyer is the producer's margin for profit. This fact tends to force down cost in one direction and to force up price in the other. Successful manufacturers, by means of quality, style, finish, adaptability, etc., affect the buyer's judgment with considerations that do not create a direct pressure on cost through a demand for a lower price. The difference between a buyer's cost and selling price is his margin for profit. The greater certainty a buyer feels that he can make a profit on an article if bought at the price asked for it, the less urgent will his demand be for a reduction in price. The art of making a profit for a manufacturer is confined to the problem of offering buyers articles to sell on which they can certainly make a profit if they buy at the price asked for them. The development of this art demands the highest degree of intelligence and skill and the use of the best class of labor-performing machinery. From these sources the power to undersell those less efficiently equipped is derived. In reducing cost or maintaining price by this process, labor that is the most intelligent and skillful and commands for these reasons, the highest rate of pay per day is the most effective.

Intelligence and skill first find expression in creating labor-performing machinery, and afterwards in operating it. To illustrate:

A piece of carved wood for furniture ornamentation, produced by hand labor, cost \$75. A carving machine was created to produce the same ornament. The operator of the machine received double the pay of the hand carver, but the ornament produced by machine labor cost only \$2.50, and when finished and placed in position experts could not with certainty distinguish the machine-carved from the hand-carved ornament. The buyer for final use can never do so.

In iron-working industries the reduction of cost is the problem that gives superintendents and shop managers the greatest anxiety. In solving such problems labor-performing machinery is the most efficient factor. A workman using a breast drill for making holes in iron frames, work once represented the greatest advance in the art. Now power-driven drills, single or in combination, boring from one to eight holes at a single operation, adapted for nearly every conceivable purpose, do far better work at a fraction of hand-work cost, including the wages of highly paid operators to manage the machines.

In cases of this kind the manufacturer does not have to give all the advantages of his reduced cost to the buyer. He offers the buyer an article on which a profit can be made at the price asked for it. This satisfies the requirements of the buyer.

The tendency of competition will be to lower prices for such commodities, but it will be a long time before the boundless mass of humanity, unaccustomed to the ownership of such articles, will become good judges of their machine-made value and so fully supplied that they will not eagerly buy at prices affording a good manufacturing profit. Furniture, ornamented with machine carvings, will for a long time be more profitable to manufacturers and merchants than plain kitchen chairs.

The articles on which manufacturers can make the best profit, selling in free competition with the world, are the identical articles which importers will find it most profitable to handle. These articles can be found in greater abundance in America than in any other country.

Foreign importers who personally inspect the permanent show made in the great cities of America, fitted up with reference to the domestic trade of the United States, the largest domestic market in the world, make many discoveries which, to them, have all the practical value of newly discovered gold mines. In no other country is there such a development of skill in designing, building and operating labor-performing machinery for the reduction of cost of production. This is the secret of the newly achieved success in international competition.

COMMERCIAL INVASION OF SOUTH AMERICA.

IN response to invitations extended by the Argentine, Brazilian and Uruguayan governments, Theodore C. Search, president of the National Association of Manufacturers, is making up a party of representative manufacturers to visit those countries. The date for their departure has been set for July 1st.

The tour will be undertaken for the purpose of extending American export trade in South American markets. The make-up of the party is well calculated to insure eminently practical results. Each member of the party will be a leading and representative man in some important branch of industry, and in this manner the investigations by the party will be given the broadest possible scope. Every man will be expected to observe those conditions most directly affecting the branch of business in which he is engaged, and upon the return of the party the observations of its members will be consolidated in a comprehensive report on the South American markets.

The members of the party will not only act for the industries in which they are engaged, but they will also be commissioned as delegates from the boards of trade and chambers of commerce of the leading cities. The party is limited to 30, and the utmost care is being exercised in selecting its members, in order that it may meet every requirement from a practical business point of view.

A PREVENTABLE BUSINESS PLAGUE.

THE plague of fear foreboding the disturbance of peaceful international relations has paralyzed business enterprise in all countries for several months. The Venezuelan question; the Armenian question; the attack upon the Transvaal Republic; the conflict between Abyssinia and Italy; Cuba and Spain; the Soudan and England have all combined to unsettle confidence in the stability of peace and thus to paralyze all vocations dependent upon peace for their successful pursuit.

If business men will take lessons from history, they will easily learn that no age nor country has ever been free from devastation by plagues, physical, moral or industrial. They will also learn that while plagues of any sort have been thought unavoidable, they were borne with equanimity; but when the acquisition of intelligence demonstrated that any one of them was preventable, the necessary remedies have been applied, and that particular plague has ceased to work havoc among those who knew how properly to deal with it.

The plague of war or the fear of war is preventable, and this fact and the remedy were clearly pointed out in *THE AMERICAN EXPORTER* for November, 1895. Not one of the causes that have tended to unsettle confidence in the stability of peace since the publication of that article could have exerted its evil influence or have existed had the commercial world been prepared promptly to apply the remedy there recommended. The suppression of the plague of war awaits the assertion of the right to peace by nations as well as by individuals. This day is not far distant.

Having pointed out six months ago a way in which wars of all kinds between civilized peoples can be suppressed, *THE AMERICAN EXPORTER* now gives the welcome assurance that there will be no breach of international peace by any civilized nations. Other nations cannot disturb the peace on which international commerce is founded.

The events of the past six months have forced a world-wide discussion of the question—How can international peace be main-

tained? More progress has been made in a proper understanding of the subject, in arriving at an agreement that plague of war is preventable, and as to the remedy that must be applied to abolish the evil, during these six months than has been accomplished during the previous 25 years, and this fact justifies the prediction that no wars of international consequence will now occur. Those who have curtailed their operations through fear of such a disaster may safely give full play to all their energies in industry and commerce. Those who realize and act upon this fact quickest will first profit by the expansion of business that is sure to follow the depression through which all countries have been passing.

FAVORABLE CONDITIONS FOR FOREIGN IMPORTATIONS OF AMERICAN MANUFACTURES.

THE attention of manufacturers in all countries is now being turned more than ever toward export trade. This is the logical sequence of the enormous increase that has been made in manufacturing facilities and resources throughout the world within the last 30 years. The struggle to reduce the cost of production has led to the erection of newer and better plants in every line, but old plants are not dismantled, and will continue to operate so long as a small fraction of profit can be realized on their products. There is a constant accumulation of capital and a steady increase in the amount of product from a given investment and payment of wages. All of this vast quantity of product at cheaper prices than ever before is struggling to find purchasers. American manufacturers are seeking foreign markets as they have never done before, although the enormous demands of their home market render foreign trade only an incident in their operations. Evidence of the way in which all markets are being crowded with commodities from every source of supply is given by the loud complaints from English manufacturers, who have long had things their own way, of the sharpness of competition from France, Germany, Austria, Italy, Russia and America. These conditions are favorable to importers, because the more sellers there are and the greater variety there is of commodities offered, the better are the opportunities for importers to secure salable articles at prices favorable to profit making.

The conditions that should turn the attention of foreign buyers for importation to American manufactures may be briefly stated:

1. The manufacturing plants in America are all comparatively new, and the genius of American inventors and mechanics has equipped them with the most affective labor-performing machinery ever devised.

2. The domestic demand is larger in America than the combined domestic and foreign demand in any other country. This enormous demand stimulates the keenest competition between American manufacturers, on the basis of absolute free trade, and, on account of volume required, enables them to reach the limits of economic production. The force of this fact will be appreciated when the following concrete statement of the world's commerce is considered:

World's railroad tonnage, exclusive of United States.....	600,000,000
World's ocean tonnage, including United States.....	140,000,000
Total tonnage of world's commerce outside of the United States	740,000,000
Railroad tonnage within the United States.....	800,000,000
Excess of United States railroad tonnage over combined railroad and ocean tonnage for balance of the world.....	60,000,000

3. Enormous as is the output of American manufacturing plants, their equipment for machine labor is such that the output can be easily increased to satisfy any additional demand represented by foreign orders. This increase can be produced at a cost price so low that a profitable selling price can be named which will be less than cost at old plants found in every part of Europe.

4. American manufacturers and workmen represent all nationalities. This gives them a decided advantage over the manufacturers and workmen of other countries. Englishmen make English goods to be sold to Germans, Frenchmen, Italians, Spaniards, etc.; the Germans make German goods to sell to Frenchmen, and Frenchmen make French goods to sell to Germans; but Americans are free

from clannish tastes and prejudices. Being a mixture of all nationalities, they can adapt quality, style, utility to the tastes and habits of the people to be supplied more correctly than any of their foreign competitors. They are trained to this by their contact with representatives of all nationalities who have made their homes in the American Republic.

5. High American wages paid to skilled mechanics operating labor-performing machinery means low labor cost of production—so low that American manufacturers are underselling the best European manufacturers on the one hand and the lowest-priced Oriental labor on the other. This is proven by the fact that in whatever market the products of American manufacturing plants once become known, a demand for other American-made articles invariably follows. Some years ago American locomotives beat those of English make in Japan. Now the Japanese are beginning to buy American rails. American locomotives have been selling in South America, Australia and Russia, and American Agricultural implements, hardware and household furniture are found in every market in the world. These are now being followed by American cotton, woollen and silk fabrics. American manufacturers control the plated-ware market of South America. An agent of the German starch manufacturers has recently notified his principals that unless they consolidate and reduce cost of production they will be driven out of the English market by Americans. German pencil manufacturers complain that low-priced American goods have driven them out of European markets.

6. All that American manufacturers have done so far in foreign trade is simply to sample the markets. Intelligent foreign buyers for importation, after a close study of all conditions, are seeing more clearly than ever before that they can obtain articles from America possessing profit-producing qualities far superior to those coming from any other source of supply. Many of them are placing orders in America for the manufacture of specialties adapted to their individually controlled trade, and others are gradually transferring their trade to American-made goods.

Every indication points to the practical advantages gained by foreign importers who come to America and inspect the possibilities of its manufacturing plants.

ELECTRICITY IN 1896.

THE opening of a National Exposition of Electrical Appliances in the Industrial Arts Building, New York, May 4, 1896, under the auspices of the National Electric Light Association at its tenth annual convention, affords a fitting viewpoint from which to note progress made and promised in the application of electricity to useful purposes.

The occasion brought together a group of electricians whose achievements are known throughout the world, justly honored types of American nobility crowned by merit of their own genius—Thomas A. Edison, Nikola Tesla, Elihu Thompson, Alexander Graham Bell, Park Benjamin and A. A. Anthony.

One hundred and thirty-five names are entered on a partial list of exhibitors, while in the convention of the association there were represented 10,000 lighting plants and \$750,000,000 invested in electrical works.

Arrangements were made to start the machinery of the exposition by a current transmitted from the Niagara power plant to its model in the exposition building, and at the same time to transmit the roar of the cataract by telephone, receivers and transmitters, so that those standing by the model could hear it. Arrangements were also made to send telegraphic messages to San Francisco, New Orleans, St. Paul, Augusta, Me., and around the world. The sending instruments were in one gallery and the receiving instruments in the gallery opposite. The globe circuit was the longest over which an electrical current has ever been sent. Through the courtesy of Sir W. H. Preece, chief of the British Government lines, the route was from New York to Canso, to Lisbon, under the Mediterranean Sea to Suez, along that famous canal, under the Red Sea to Aden, thence to Bombay, land line to India, to Madras, to

Singapore, to Northern Australia, Melbourne and Sydney. Returning by cable to Cape of Good Hope, along African coast to Lisbon, crossing Atlantic to Pernambuco, Brazil, thence to Mexico, San Francisco, and across the continent to New York.

The proceedings were opened by Mr. C. H. Wilmerding, the president of the association, introducing Mr. Wurster, Mayor of Brooklyn, who made the address of the evening, in the course of which he said:

"Here are exhibited every form of apparatus by means of which electricity is applied to use in various mechanical and industrial enterprises. Wonderful as the exhibit is, we feel that we have as yet but crossed the threshold of its possibilities. To-night, for the first time in the history of the universe, the power of electricity will be transmitted a distance of 462 miles (the longest previous transmission was in Germany, 110 miles), when electrical energy generated at Niagara Falls will set in motion the machinery and appliances of this exposition hall.

"To the future of the mechanical and industrial enterprise of the world the events of this evening are important as the first word of intelligence transmitted by Morse by means of imperfect instruments. Those instruments have been so improved and utilized that the pulse of the world would cease to beat should they be suddenly destroyed. I believe the future will show as much progress in the use of electricity as applied to industries as the last half century has shown in the perfecting of Morse's telegraph."

The Hon. Levi P. Morton, Governor of the State of New York, at the close of this address, pressed a key and said:

"I release the electric current generated by the great cataract of Niagara and declare the exposition to be formally and duly opened."

Simultaneously a set of vacuum tubes in the form of a square frame were illuminated with the pale blue colors of the X rays; the great ceiling chandeliers blazed forth; myriads of incandescent lights along the fronts of the balconies and scattered throughout the exhibits gave added brilliancy; a model of the Niagara Falls power plant was set in motion, the roar of Niagara itself was heard, and the great machinery of the exposition was endowed with life.

The Governor then sent messages to Sir W. H. Preece, London, and the Mayors of San Francisco, New Orleans, St. Paul and Augusta, Me. In a few moments the following replies were received:

"LONDON, May 4.

"Wish your exposition every possible success.

"W. H. PREECE."

"SAN FRANCISCO, May 4.

"San Francisco recognizes the electrical chaining of Niagara as the supreme triumph of this wonderful country. It is the mastery of mind over matter. The result is prophetic of undreamed-of progress, and therefore commands our congratulations.

"C. L. TAYLOR, Acting Mayor."

"NEW ORLEANS, May 4.

"I congratulate you upon the opening to-night of an electrical exposition which cannot fail to be productive of great value to the world.

"W. C. FLOWER, Mayor."

EXTENT OF THE EXHIBIT.

To give a list of all the uses to which electricity is shown to be applied and of the appliances by means of which the application is made would require the publication of columns of names. To publish a complete detailed description of all of them would require the printing of a large volume. The exhibit is an object lesson that will teach the public some hints of the benefits it is deriving and may hope soon to derive from the uses of electricity, and the technical, the progress made in the development of apparatus for its generation, transmission, control, subdivision and application. It also exhibits the remarkable progress that has been induced by the requirements of electrical service in the perfection of steam-generating and power machinery and all of its accessories.

Illustrating the wonderful fertility of the field for electrical development, reference may be made to two examples.

THOMAS A. EDISON.

In THE AMERICAN EXPORTER for March, 1896, reference is made to Mr. Edison's iron-mining plant, in which all labor is performed by electrical machinery, and for April, 1896, to his utilization of the X rays by means of his latest invention, the fluoroscope. He has on exhibition apparatus of his invention covering almost the entire range of electrical appliances from lighting and power uses to heating for cooking; for telegraphy, telephony, phonographs and the fluoroscope. In his electrical kitchen all cooking is done without a fire: steaks are broiled, coffee made, etc., by merely turning a switch.

The United States have issued 711 patents to Mr. Edison for his inventions.

NIKOLA TESLA.

At the present moment Mr. Edison may be styled the artisan and Mr. Tesla the prophet of electrical development. Nearly the whole of Mr. Edison's work has gone into commercial use; while much of Mr. Tesla's work has taken this course, his best work is still for the future. The truth of this statement will be realized when mention is made of some striking features of Mr. Tesla's exhibit.

There is an oscillator by means of which he develops a current of 10,000,000 volts, which he has not yet applied to a useful purpose. He declares this current to be practically harmless, the method of transmission being so regulated that it cannot kill, while killing is done in electrical executions with a current of only 1,700 volts.

The transmission of electric power from Niagara to the exposition is made by Mr. Tesla's system. It is an alternating current of 350 volts, and is transmitted at a loss of about 30 per cent. for the 462 miles.

By utilizing electrical vibrations in vacuum tubes Mr. Tesla promises to revolutionize electric lighting. Instead of carbons and filaments, the vacuums will be filled with an electric glow like that of sunlight, and as steady as the light of noonday.

Mr. Tesla also exhibits a model of mechanism for telegraphing without the use of metallic circuits. When it is perfected all he will have to do will be to signal Singapore and Singapore will answer without the medium of telegraphic wires or ocean cables. Grant him this much and no reason can be given why he should not communicate with the stars.

A large number of United States patents have been issued to Mr. Tesla for his inventions.

THE ECONOMIC VALUE OF ELECTRIC LIGHT AND POWER.

Difficult as it is to form any opinion with which to bound the possibilities of the uses to which electricity may yet be applied, it is not more difficult than to form a just estimate of the economic value of that which has already been accomplished. An idea may be obtained by imagining what the effect would be upon industry and commerce if all use of electricity should be suddenly suspended. Such a catastrophe would give the world a vivid lesson, teaching the extent of its indebtedness to American inventive genius, skill and enterprise. The best of all there is in electrical development has emanated from initial work done in America, and the best promises for the future are budding in America. To America all buyers of electrical equipments, for whatever purpose required, should look for supplies.

An estimate of the revolution in industry and commerce to be wrought by the use of electric power was published by the writer in a book (1889) under the title of "The Economic Value of Electric Light and Power." The statement there made is:

"Every widening of the limits of power distribution has increased the opportunity for employment; has added to the ease and refinement with which the laborer accomplishes his work; has multiplied the number of those who are able to supply the wants of a civilized human being, and for that reason have become human; and has enlarged the surplus wealth of the community where such distribution of mechanical power has been effected.

"The economic problem may be formulized as follows:

"That power is cheapest and most beneficial which can be sub-

divided among the largest number of users, with a decided advantage to each over his former method of obtaining power; or which gives to new users power which they could not otherwise obtain.

"A comparison of the relative economic value of different methods of generating power may be made thus:

"Water Power—The cheapest to generate, the most difficult to distribute. Its benefits may be expressed by 1.

"Steam Power—More expensive than water power to generate, but its generation is possible at thousands of points. Its benefits may be expressed by 1,000.

"Electric Power—More expensive than water or steam power to generate. Its generation is possible at all points where wind, water or steam power can be obtained. Its distribution can be spread over an area a thousand times greater from the point of production than that which can be served by water or steam. Its benefits may be expressed by 1,000,000.

"If steam power has an economic value 1,000 times greater than that of water power, then electric power has an economic value 1,000,000 times greater than water power, and 1,000 greater than steam power."

The means of generating, distributing and applying to useful work this wonderful power can now be furnished by American manufacturers to all users of power throughout the world.

INTERNATIONAL COMMERCE.

ALL trade is an exchange of unlike commodities. Trade compelling-inducements are as varied as the wants, the tastes and the occupations of the individual members of the human race. Regardless of the special character of the reason one may have for selling or buying, one consideration correctly includes all purposes of both seller and buyer—to make a gain. The desire for gain may be satisfied in many ways other than by a profit counted in money, but in whatever form the gain may be obtained, it is the desire for gain that induces sellers to seek buyers or buyers to seek sellers.

The margin and the opportunity for making a gain increase in proportion to the geographical distance or difference in occupations that separates producers from consumers. Producers and consumers are not distinct classes of individuals, but the representatives of two sides of the same transaction. All persons must produce or they could give nothing in exchange for that which they wish to consume; all persons must consume; they cannot sustain life or any of its activities by any other process. Producers and consumers living in the same community or following similar occupations, own commodities so nearly alike that but little or no gain of any kind can be made by exchanging commodities with each other, therefore, but little trading occurs between them.

Geographical distance is an important factor in creating industrial separations between producers and consumers. It covers the great differences in climate, soil and natural products; race characteristics, education, tastes, habits and occupations. All of these conditions are contributory to the limitless variety of products that enter into the volume of international commerce and the equally limitless ways in which they are utilized or consumed.

In considering the movements of consumers, the fact should always be clearly kept in mind that gains are made by exchanging commodities. There can be no selling without buying; there can be no buying without selling. The thing delivered is sold; the thing received is bought. Seller and buyer are interchangeable terms. Without payment there can be no selling. The buyer sells whatever he gives in payment; the seller buys whatever he receives in payment.

Exchanges are most profitable when difference in kind is greatest, and differences in kind are most frequent and greatest between commodities produced in different countries. The logical conclusion and the economic fact is, that international commerce is the greatest source of national wealth. National wealth is the aggregate of individual gains.

Inducements that urge the export of commodities, urge with

equal force the importation of commodities. Some commodities are designed for special uses; this limits their sale to particular districts. Others are universally useful and many find sale in all markets throughout the world. Importers find their business most profitable when they learn where they can procure at best advantage the foreign-made goods most suitable to the wants of the people they supply. There can be no truer guide to sources of production than the natural resources; genius in designing for use required, and skill in working out designs in products finished for use possessed by a people so largely as to make them national characteristics. That these attributes are enjoyed in a prominent degree by the American people is an indisputable fact. American inventions are used in every nation and have done more for industrial progress than the inventions of all other nations. American manufactures offer to foreign importers greatest variety, utility and differences from their domestic products, and therefore, offer the largest margins and opportunities for making gains.

The fact that international commerce is the most productive source of individual gains and national wealth is being recognized and acted upon by manufacturers and importers in all nations, more clearly and emphatically than ever before. To-day, every nation is intensely in earnest in its efforts to increase its export trade. Knowledge of the benefits of an export trade has penetrated nations that for thousands of years have maintained a national policy of isolation. With increasing energy this knowledge is destroying national prejudices and opening ports. In this way recognition of a fundamental truth is being attested—exports must be balanced by imports.

International commerce is a mutual exchange of commodities induced by a mutual desire for gains. It is a business by which both parties to the transaction realize gains with which they are satisfied. This is the enduring basis of prosperity.

When all gains have been measured and the progress of each nation summed up for the Nineteenth Century, the universal gain will be measured and expressed by the volume of international commerce.

RETROGRESSION OF ENGLAND'S FOREIGN TRADE.

IN STRONG contrast with the statement of the growing export trade of the United States is the evidence of the diminishing trade of England. The London *Economist* is authority for a statement showing that the United Kingdom supplied 50 per cent. of Australian imports in 1883 and in 1893 only 41 per cent. For the same period the imports of Canada from the United Kingdom dropped from 41 per cent. of the whole to 33 per cent., while in South Africa the figures rose from 75 to 79 per cent. of the total imports. It is added, "these figures are not alarming, nor even disquieting; but if England is to retain its supremacy as an exporter to its own colonies, they need altering."

During these ten years, 1883 to 1893, the trade of the colonies with England certainly increased, but their trade with other countries increased so much faster, the trade of England with its own colonies virtually became a retrogression, when compared with the much greater progress of other countries. Failure to increase with the general ratio of increase is to recede.

THE electrical exhibition now open in New York is daily attended by large crowds of interested visitors. Before noon each day the big hall is filled with well-dressed men and women, every one of whom seems most anxious to see the Edison fluoroscope described in our last issue.

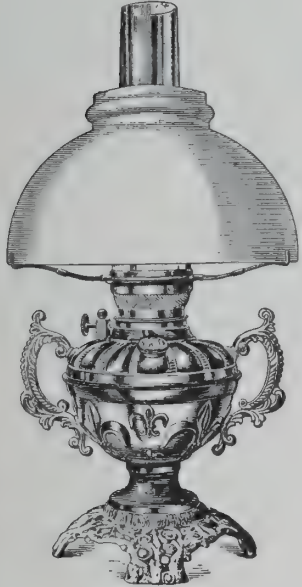
Another great attraction is Mr. D. McFarlan Moore's electric light, which was seen by 1,000 persons an hour, in batches of 20 a minute. The Elihu Thomson exhibit also claims a great deal of attention of the visitors. It consists of an interesting collection of original dynamos and other electrical appliances, on which Prof. Thomson obtained patents. People from all parts of the country, and even Europeans, are attending the show in large numbers and examining with interest the various exhibits. One of the visitors is a Japanese iron and carriage manufacturer from Tokio, named T. Hiraoka. He is much interested in the exhibition, and said electricity would be the power of the future in Japan. There are many electric lights and power plants there now, he says, and they are increasing rapidly and are all of American manufacture.

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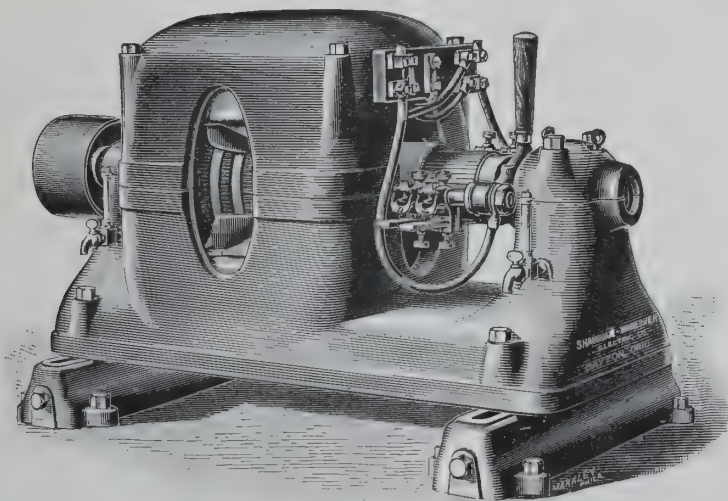
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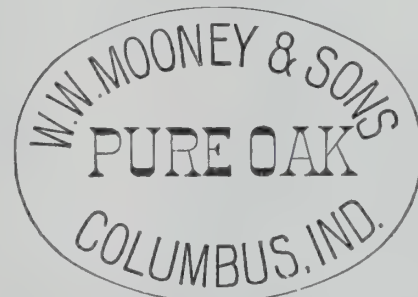
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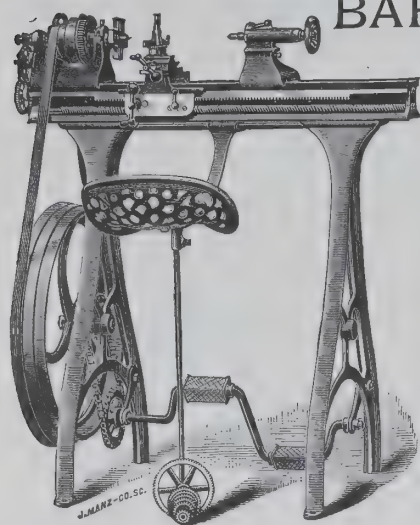
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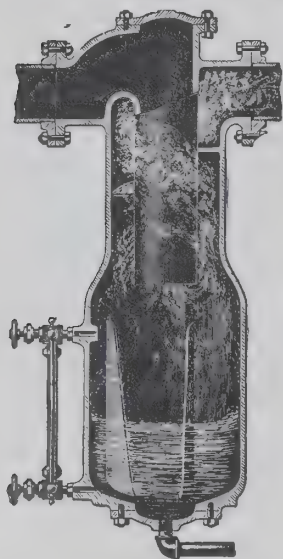
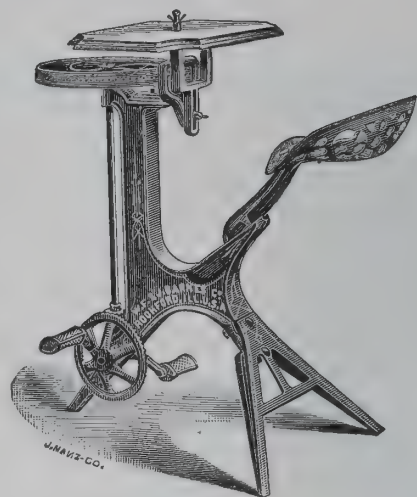
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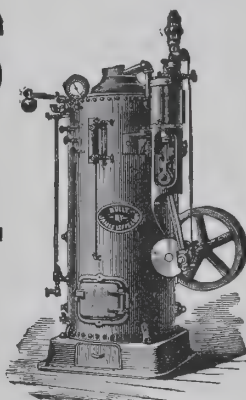
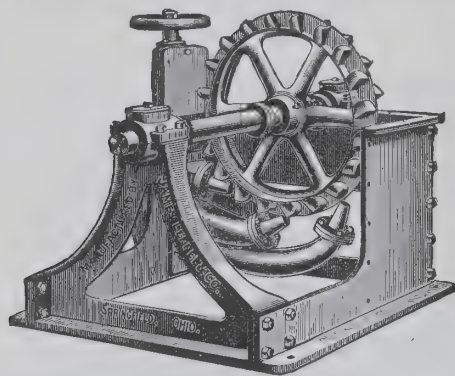
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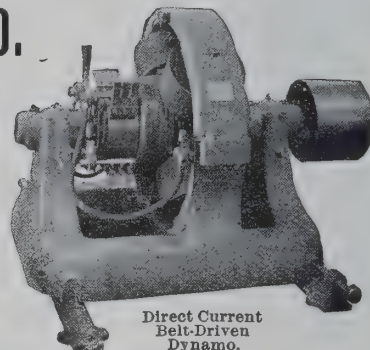
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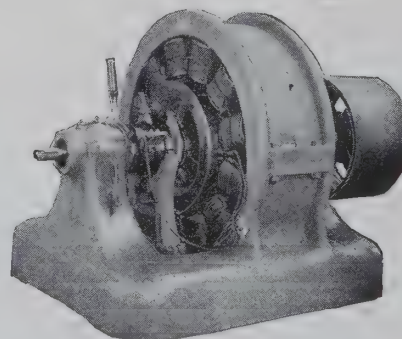


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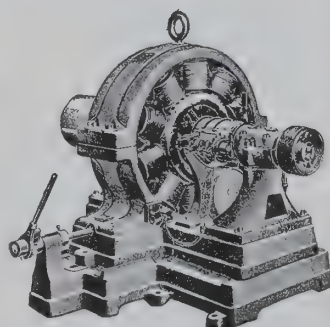
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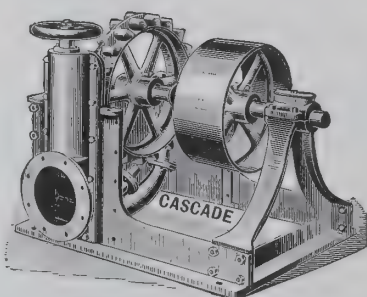
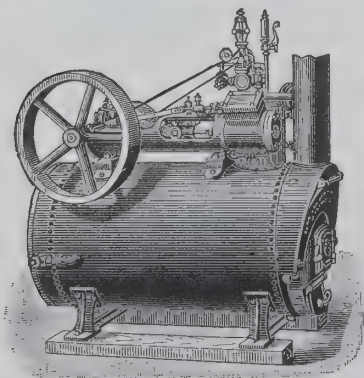
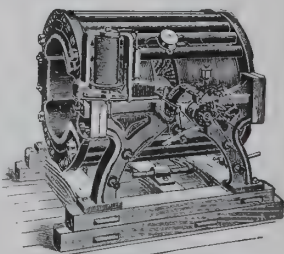
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ANOTHER TRIUMPH OF AMERICAN SHIP-BUILDING.

THE recent trial of the American battleship Massachusetts has challenged the attention of naval and merchant marine officers and owners throughout the world as vividly as a great naval victory would have done. In recent years naval victories are gained by engineering skill, not by actual conflict.

The Massachusetts is a duplicate of the Indiana, both of which were built by The Wm. Cramp & Son's Ship and Engine Building Company, of Philadelphia. The Massachusetts has a displacement of 10,300 tons. Its armor is 18 inches thick. Its batteries consist of four 13-inch, eight 8-inch and four 6-inch rifles, the combined discharge of which hurls a weight of three long tons. Outside of the Indiana this discharge is unequalled by any ship afloat. These ships are built for coast defense rather than for long sea voyages, and are ideal fighting machines. It had been conceded that the offensive and defensive qualities of the Massachusetts were superior to those of any other ship, but an official trial was needed to demonstrate how it could carry these powers into action. This trial has resulted in a victory in naval construction for its builders.

The speed of foreign battleships, where 17 knots is claimed, has been obtained under short-measured mile conditions. On the trial trip of the Massachusetts for 62 knots a speed of 17.3 knots was sustained, and unquestionably a much greater speed was made over single miles. The average speed of 15.16 knots, practically for five hours, shows beyond question the ship's ability to sustain great speed for long periods. In every respect the engine performance was without equal. There was not a drop of water, not a leaking joint or tube, or started rivet anywhere, and after this severe ordeal the ship can be made ready to go around the world at once, if necessary. To obtain such results the workmanship must be of the best and be perfectly executed from equally perfect designs. Thanks to American ingenuity, skill and enterprise the Massachusetts is to-day the stanchest, most powerful for offensive or defensive action and fastest battleship in the world.

NEW AMERICAN MINES OF WEALTH.

ONE powerful cause operating to increase American exports of manufacturers is the almost limitless range of their utility. Many American inventions have made history in the civilization of every country in the world. No less important, in the sum of their results, are the thousands of minor inventions, each making a little improvement in its special sphere.

The supremacy of the United States in inventive genius is strikingly shown in the report of the United States Commissioner of Patents for the year 1895. During the year there were issued to foreigners 2,049 United States patents, and to American citizens 19,949; 1,820 trademarks and three prints were registered and 46,899 applications were filed for patents, trademarks, labels, prints, etc.

A comparative statement of patents issued in 1895, by all countries, furnishes an indisputable index to the relative industrial

genius and progress of the respective nationalities. The record is as follows:

United States.....	21,988
England.....	614
Germany.....	539
Canada.....	312
France.....	202

All other countries are below 50 each.

The total issue of patents in 32 countries, including Great Britain, Germany, Russia and France, covering the entire period since patents were first granted, shows an issue of 562,458 for the United States against 981,961 for all the rest of the world.

If each patent is evidence of some improvement this is the ground on which it is issued—and each improvement has an industrial value—then there has been opened in the United States during the year 1895 nearly 22,080 new mines of wealth against 1,667 for all of England, Germany, France and Canada. Such an exhibition can but emphasize the advice of THE AMERICAN EXPORTER to all foreign importers—Come to the United States and make a personal examination of its resources and facilities if you want to create profitable trade relations.

Tacks.

TACKS are made in great variety and for many different uses. The best tacks are made of imported Swedish iron; the next grade of American soft steel, and the cheapest of common American iron. Tacks are also made of copper. Some tacks are tinned, and for ship use tacks are galvanized. Tacks are made of sizes ranging from ½-ounce to 24-ounce. The tack commonly used as a carpet tack is an 8-ounce tack. A 24-ounce tack is about 1½ inches in length.

There are many kinds of tacks, made for a great variety of uses, and they are put up in many different forms. There are gimp tacks, looking-glass tacks, upholsterers' tacks, trunk tacks, lace tacks, basket tacks, brush tacks, coffin tacks, shank tacks, lasting tacks, miners' tacks, cheesebox tacks, and tacks for many other uses. Within the past dozen years the sale of double-pointed tacks has increased tenfold with the greatly increased use of electrical wires. Double-pointed tacks are also used for tacking down straw matting and for other purposes.

Tacks that are sold in papers are put up in full weights, half weights and quarter weights, the weight indicating the size of the package. Almost all kinds of tacks are also sold in bulk in 25-pound and 50-pound boxes and in 100-pound kegs.

A 1-ounce tack machine will make in a day about 100,000 tacks altogether. The iron is fed into the machine in a plate which is of a width a little greater than the length of the finished tack, so as to allow of material to be upset for the head. An 8-ounce machine will make about 200 pounds of tacks a day, 1,250 to the pound, about 250,000 tacks. Tacks that are put up in papers are weighed out and the papers filled by hand. Comparatively few tacks are put up nowadays in tied-up papers; they are put up mostly in little pasteboard boxes. These boxes are packed in larger boxes and in turn in cases for shipment. A common tack package is a case weighing about 100 pounds.

The annual tack product of this country is estimated at about 20,000 tons. If these tacks were all put up in papers of the usual assortments of sizes and weights, the papers would number about 300,000,000, or something more than four papers per capita of the population.

—Philadelphia machinery has attacked the stronghold of British textile interests. A Philadelphia knitting machine for the production of seamless hosiery has been given the preference over native and less efficient machinery. A great many imported articles which are sought for by the anglomaniacs because they are "so English, you know," are the product of American made machines.

EXPORTS OF AMERICAN WARES.

MANY things influence the currents of commerce. All causes, however, combine to produce one result; all distributors, from the retail dealer to the merchant, the jobber and the importer must make a profit by handling the goods they sell. The profit-producing quality of commodities is never more fairly nor more severely tested than when they enter a foreign country and are brought in competition with the manufactures of that country and with all commodities, similar in kind, imported from other countries. Importers are governed only by the profit-producing qualities of commodities when placing their orders. This being a simple business fact, it is clear that a continuous and an increasing export demand for the manufactures of a country is based upon the profits realized by those foreign importers who have engaged in the trade. Guided by such evidence importers in all countries, seeking to extend their business or to render it more profitable, will thoroughly search the productive resources of that country the record of whose exports shows a continually increasing volume of business. Any importer who gives thought to the subject must conclude that such a trade could not exist if the importers handling it were not making money by it.

This point having been settled the natural question for an importer to ask himself is, "If others are making money by importing from that country why cannot I do it?" or "If I have made money on the few things I have imported from that country is it not probable that other things suitable for my trade are manufactured there which I might import with an equal or a greater advantage?" It is the wide-awake, well-posted importer who knows with what country he can deal to best advantage. He is also a good judge of the style, finish and general utility of commodities offered to him, judged by the standards of the people to whom he must sell. When he finds an article possessing true merit he will accept the disadvantages attending its first introduction, feeling sure of large gains when a demand has once been established. The sagacity of such importers is rapidly turning their attention to American manufactures.

From the day of its discovery until now America has been noted among the people of other nations for its mines of precious metals, yet those mines, at their best, have never poured into the channels of commerce current values comparable with the value of American agricultural and manufactured products. For importers of manufactured commodities the factories of the United States are exhaustless mines of wealth which will become richer the more thoroughly they are worked and the more broadly their output is distributed. Comparatively only a few have ever made a profit by handling importations of American gold or silver bullion, but all merchants—the retailers, the jobbers and the importers—in every country can make a profit by handling importations of American manufactures. If confirmation of this statement is required beyond that furnished by the steadily growing volume of the exports of American manufactures, it can be secured through properly directed investigation, in making which *THE AMERICAN EXPORTER* will gladly assist any foreign importer.

Useful Hints to Foreign Buyers.

(From our Special London Correspondent.)

LONDON, May 1, 1896.

THE other day one of the great London dailies devoted considerable space to the subject of America's expanding foreign trade and quoted a lot of statistics in support of their statements, the total volume of trade (including imports and exports) for the seven months ending January last being £18,000,000 (\$90,000,000) greater than for the corresponding period of 1894-95. At last even the London journals can spare time to recognize these facts, which have been referred to repeatedly in this column for years past. It is, therefore, no inappropriate time to call the attention of foreign buyers to some American manufactures. Living in the greatest centre of trade and commerce I am able to gauge with a fair amount of accuracy the trend of public and industrial events; and the signs of the times point unmistakably to a development of American industry. But I do not propose to stop at this moment to discuss the question of that expansion, which would require an article all to itself; suffice it to say that thoughtful people recognize the fact that all European manufacturers

must now take the American producer and exporter into account when dealing with home and foreign markets.

In this article I wish to deal more particularly with the development of American trade in England, and I select this centre for the purpose of illustrating what I have to say, because I am naturally more familiar with our own markets, and at the same time I am going to contend that if an American article can sell in this country in direct competition with a similar article made in our own workshops, that the American article is undoubtedly the best. I do not know if any one will traverse that proposition, but to me it seems to be a perfectly reasonable and just inference from what I am going to state.

Now there is nothing like hard, stern facts in business matters, so I have drawn up a little table of figures showing the principal exports of American manufactures to the United Kingdom during the last four years. By looking at this the reader will be able to see if I am exaggerating or setting down aught in malice. The statistics are taken from the monthly reports issued by the Washington Department of State.

	1892.	1895.
Agricultural Implements.....	\$620,982	\$757,715
Books, Maps, etc.....	665,024	812,826
Carriages, etc.....	364,552	364,861
Builders' Hardware and Tools.....	576,641	857,417
Machinery.....	2,218,600	2,611,724
Sewing Machines.....	890,480	848,069
Tobacco Manufactures.....	1,188,988	1,372,820
Manufactures of Wood.....	1,645,276	2,070,581

The year 1892 was an excellent one for American exports to England, and it speaks well for the strength of the trade since then that it has kept so well during the succeeding bad times.

I cannot help being surprised at the way in which American manufactures are advancing in favor in this country. It is not so many years ago that American furniture was all but unknown in England, except to the very few; but now there are depots scattered about this city and all the principal towns for its sale. I have seen American roll-top desks, chairs, and smaller articles exposed in the windows of leading stores in the best streets of London. If you want boots or shoes of American make you can get them quite easily here by applying to the various stores keeping them. And then, too, any one fancying an American tailor can readily satisfy his longing, as there are several such in London and other towns. If you want your teeth extracted you go to an American dentist, who in turn uses instruments of American manufacture. You go into a jeweler's store and you purchase an American-made watch. The American barber's chair—that luxurious chair so different to our old time seat—is now a familiar object in the best saloons.

Sheffield has always prided itself upon having the lead in cutlery; but we find now that it is American-made shears that are asked for by operatives on account of greater hardiness and being able to do more work with them.

It really looks as if American makers of cycles will be contesting the English and European markets, and the collection of American machines at the recently held Stanley show in London was very significant of the coming struggle. Of course I know that most of the English makers affect to ignore or despise American competition, but 20 years ago the English makers of machine tools adopted a similar attitude, and now what do we see to-day? I rather think that many British dealers would prefer to see the last of American tools.

If you go into a carpenter's shop you frequently see wood-working machinery of American manufacture, and sometimes lools and saws made by Diston and other United States manufacturers.

Glance into a merchant's office and you hear the "click, click" of an American typewriting machine. From thence look into one of the many tailors' or dressmaking establishments where many women are employed and you see them all busily engaged using American sewing machines.

In fact, I could prolong the list to an indefinite length. Of course I have had to omit many articles of more or less importance; but enough has been said to show foreign buyers that American manufactures are very largely employed and patronized in England. Now England may fairly be called the home of industry and manufacturing skill. She has had many years—almost many centuries—of experience in this direction, and I contend that if American exporters can send their goods to this country and sell them successfully, that that in itself demonstrates their superiority, in the buyers' opinion, over articles of native make. If this is so is it not quite reasonable to infer that foreign buyers cannot go wrong in giving American goods a trial? I am not saying that everything turned out of every American factory is superfine and equal to the best made in England; but I contend that the best of American make will compare very favorably in all respects with the best products of English workmanship. Let foreign buyers study this question for themselves, and when they have done so, I believe they will be inclined to agree with what I say here.

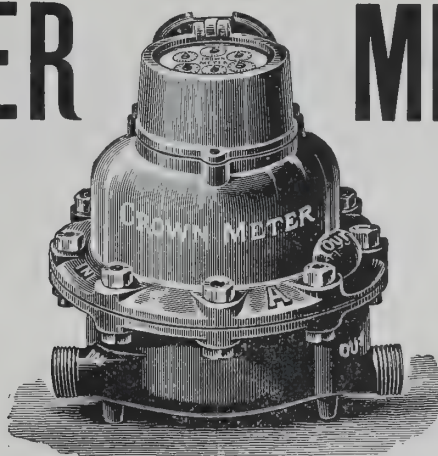
JENKINS BROS., 71 John street, New York, the originators of unvulcanized joint packing, have been experimenting for some time in order to obtain a joint packing that would fulfill all requirements. They have therefore placed on the market their new "Jenkins '96" packing. They say that while they have not changed the good qualities of the old Jenkins packing they have added to its efficiency. The improvement consists in manufacturing a packing suitable for any or all pressures of steam, that will not rot, burn, blow or squeeze out under any conditions. They claim to have succeeded in making a packing that will last for years in a joint—in fact, to last as long as the metal itself—and can be broken and used again and again.

—The United States furnishes Russia with her steam locomotives and South Africa with her trolley-road outfits.

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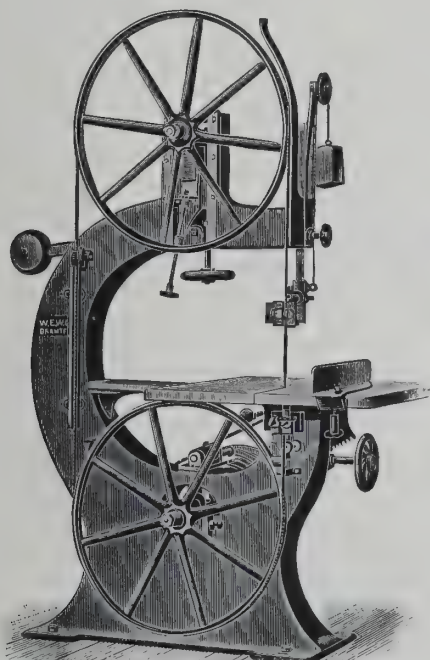
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MAY, 1896.

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No. 3.—36-inch Wheel. Weight, 2,000 lbs.

BAND RE-SAWS.

No. 5 Band Resaw.—48-inch wheels; saws 24 inches wide, 5 to 40 feet per minute. Resaw swings clear of machine when required. Weight, 4,500 lbs.

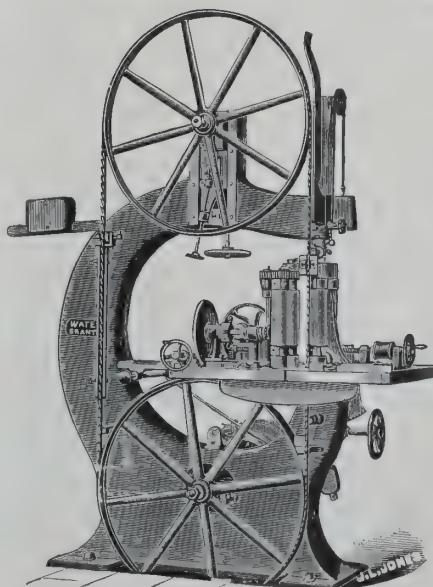
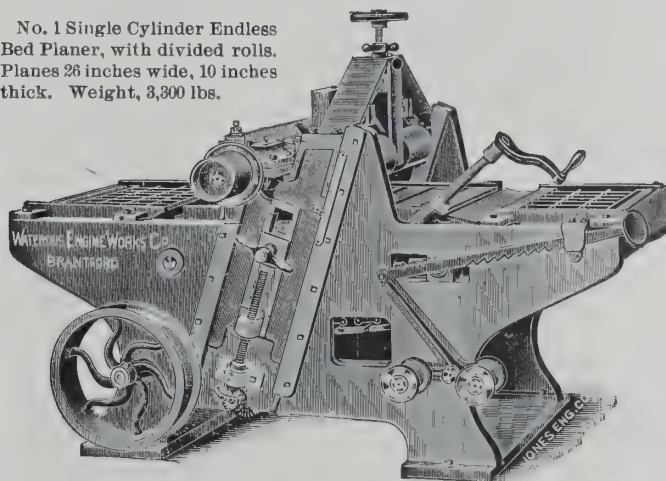
No. 6 Band Resaw.—48-inch wheels; takes saws to 3 inches; cuts 30 inches deep. Weight, 4,300 lbs.

No. 7 Band Resaw.—54-inch wheels; 4-inch saws; cuts 30 inches deep and to center of 10 inches. Weight, 5,300 lbs.

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Planes 26 inches wide, 10 inches
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Weight, 730 lbs.

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January, 1896, we moved into new premises, securing unsurpassed facilities for
executing contracts promptly and satisfactorily.
Order direct or through your commission house, sending us copy of order.

Saw Mill Machinery Our Specialty.

There are some 300 of our saw mills running in South and Central America,
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eter to small mills sufficiently portable for mule-back transport.

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England's Backwardness in Scientific Manufacturing.

ENGLAND has been waking up late to the fact that some other countries have been outstripping her in certain branches of manufacture, especially those most closely connected with scientific research, such as the various chemical industries. While the Germans, for instance, highly skilled in methods of laboratory research, have spared neither time, labor, nor money to discover improved processes and new products, the English, satisfied with so-called "practical" knowledge of the subject, have been plodding along in old ways. Thus Germany, the United States, and even such countries as Japan, are taking higher rank in certain lines. The remedy, as has been pointed out many times by far-sighted Englishmen of science, is an improvement in technical education. England's plight is not without its lesson for those who decry technical scientific education, and would rely on the "practical" work of apprentices, as their grandfathers did. Fortunately the United States is well provided with scientific schools of the first rank, and are not likely to go back to the methods of a past age. Where England stands to-day may be realized by reading the following paragraphs quoted from an article by Prof. H. E. Armstrong on "The Place of Research in Education," published in *Science Progress*, London, January. His words will be likely to surprise many who have been accustomed to regard England as the manufacturing nation of the world *par excellence*. Says the Professor:

"Our policy is the precise reverse of that followed in Germany. Our manufacturers generally do not know what the word 'research' means; they place their business under the control of practical men, often admirable men in their way, possessed of much native wit, but untrained and therefore too often and necessarily unprogressive; and such men as a rule actually resent the introduction into the works of scientifically trained assistants. Hence there is no demand here for men who have been carefully trained as investigators; consequently our schools do not seriously attempt to train investigators; in this country such people are only born and grow spontaneously, the high-class manufactured article is made in Germany alone. We elect to sacrifice at the altars of the examination Fiend, for God he cannot be called, and do our best to discourage the development of originality."

"Recently I met a friend who has not only distinguished himself by his intelligent criticism of a particular industry, but has become so interested in it that, having means at his disposal, he has himself become a manufacturer, affording a rare illustration of enterprise. I said: 'I trust you are going to work on German lines and engage a good chemist to systematically study your material, and so ascertain how its properties vary with its composition; for I have reason to think from direct experience that much is to be learned in this way which will make it possible to put the manufacture on a scientific basis.' His ready answer was: 'Oh, I've got to make the business a commercial success!' Of course I understood what he meant, while I felt that he could not fathom my meaning—he was too much an Englishman to do that. No doubt he will place his business in the sole charge of a practical man, and as long as it suffices to look only at the surface he will succeed; but then, not improbably, the Japanese will come in and beat him, for they have shown the world that they can organize as well as appreciate scientific method."

The writer narrates a story told by Mr. Lafoue, M.P., of an American customer who was in the habit of buying large quantities of a particular kind of leather in England, of then taking it to America and manufacturing it, returning the goods to England for sale. This man had remarked to Mr. Lafoue "that he had seen all the English works and did not care a fig for their competition—for they had not even begun to know how to make the best." Professor Armstrong concludes as follows:

"If the English nation is to do even its fair share of the work of the world in the future, its attitude must be entirely changed—it must realize that steam and electricity have brought about a complete revolution, that the application of scientific principles and methods is becoming so universal elsewhere, that all here who wish to succeed must adopt them and therefore understand them. It rests with our schools to make the change possible."

ANY of our readers who may be interested in the leather trade, especially as foreign importers of harness leathers, no matter in what country they may reside, ought to carefully note the advertisement of Messrs. W. W. Mooney & Sons, Columbus, Ind., U. S. A., which is to be found on another page. Their tannery is one of the largest in America, and the demand for their harness leathers is very great, both at home and abroad. It is said that their brand of harness leather is, in fact, the only one having a world-wide reputation. They have intelligently catered to the needs of the trade and the requirements of saddlers, and in this way they have built up a high reputation for their goods which are now preferred wherever known. It is only reasonable to attribute this prestige to the superior merits of their leathers.

—G. W. Turner, Sandy Lake, Pa., U. S. A., recently shipped a consignment of ironed sucker rods to Yokohama, Japan, where they will be used for drilling purposes.

—The latest product from steel is a very remarkable wire cloth known as "Translucent Fabric." It is a product recently brought out by the Translucent Fabric Company, of Boston, and designed to take the place of glass in skylights, shop roofs, train sheds and other positions where a light transmitting medium is desired. This wire cloth is from one-eighth to one twelfth inch mesh, and is covered with a semitransparent, impervious material. It is not affected by heat, cold, rain, snow or sleet. It is water and weather proof, flexible, will not break or crack, and is said to be as translucent as skylight glass.

American Laundry Machinery.

A LIST of the machinery employed in a modern laundry shows a great variety of apparatus, and gives evidence of a wide range of inventive and constructive talent employed in its production. From personal knowledge of the development of laundry machinery, we know that some of the apparently simplest machines have cost a vast amount of experimenting. Some of the machines are sufficiently complicated and elaborate to challenge the admiration of the most advanced mechanic.

A collar goes to the laundry around the corner and comes back to us in spotless purity, in perfect whiteness or with the faintest tinge of blue, with the finish of the surface, the shape and the stiffness all perfection—a result in its completeness absolutely unattainable by the time-honored hand laundress—and it costs at the most two cents. Saying nothing of the filtering of the water and the chemical analysis of it, rejecting as especially fatal all traces of iron, of the chemical investigation of soap and bleach and starch and bluing, and of the mechanical operations, each with its special apparatus, of washing, rinsing, bluing, starching, drying, in centrifugal machines and then in the dry room, and the dampening of the collar again before ironing, the simple operation of ironing the flat collar is worth calling attention to.

The operation is simple enough. The collar is passed between a hot, polished iron roll and a cloth-covered roll, and it comes out all right. For this simple operation there are a wide variety of machines with a great range of capacity and efficiency. There is one machine, now at least 20 years old, in use in the collar factories of Troy and in the great laundries of the large cities, whose price is up in the thousands and which will iron 14,000 collars per day.

There are two hot rolls in the machine, and also two "clothed" rolls. The hot rolls must be of the closest-grained iron and absolutely without a flaw or a suggestion of sponginess. In the building of these machines we have known the rolls rejected for astonishingly minute defects of surface. The rolls must be highly polished, and before use they must be waxed, the trick of which operation it is not given to every one to acquire. The roll is heated by a special gas burner, which has itself been the subject of much study and experiment. There are a series of jets about one inch apart, and the several flames are an inch or so in height. The air is supplied to the burner by a blower and is mixed with the gas in the central tube before emerging, and the air is also supplied to the jet externally after it emerges. Three valves require manipulation to adjust the jets to perfect combustion and to secure the right heat for the roll.

The "clothed" roll or drum, between which and the hot roll the collar passes, is a very different thing from the hot roll. It consists, first, of an iron open-ended cylinder, about 15 inches in diameter and one-half inch thick, mounted by two spiders upon a heavy shaft. This cylinder is turned true and left rather rough, with all the tool marks upon it. It then goes to a rubber factory and is covered with elastic rubber of a certain standard of hardness and, say, three-eighths inch thick. Upon this is stretched a covering of very thick, specially manufactured woollen felt. The size required for the felt jacket is ascertained by measuring, and is cut and the ends are butted and carefully sewed together. The felt is then soaked in boiling water and stretched by a special apparatus until it will just draw tightly over the drum. After it is drawn on, the ends of the felt are turned in over the open ends of the drum, and iron followers are drawn in by a series of long screws, thus securing the ends of the felt. The jacket is then allowed to dry. The followers are provided with wooden faces on the outside, and when the felt on the drum is dry it is placed in the machine and a large quantity of cotton cloth is then carefully wound upon it, the ends of this cloth being turned over the ends and tacked to the wooden faces of the followers. Every detail of the operation of preparing the drum is conducted with great care, and reliable expertness in the operation is valued.

These drums revolve quite slowly; the collars are fed in horizontally, with the outside of the collar upward. The clothed drum is above and the hot roll is below, so that the back of the collar is finished first. After passing these rolls, means must be provided for preventing the collar from sticking to the hot roll, or from curling up, thus making it sure that the apron will receive it flat and properly deliver it to the finishing rolls. Here the hot roll is above and the clothed drum is below. The pressure and the relative speed of rolls must be carefully adjusted. The surface of the hot roll must move faster than that of the drum, the last hot roll must move faster than the first one, and the speed of this last one must be greater or less as the vagaries of fashion or of individual taste may demand more or less gloss of finish. If a high polish is required, a third hot roll is provided. Various change gears are furnished to meet the different requirements, and cut gears are used throughout the machine, their number being over 40. All this detail may not interest every machinist, but we trust that it will be of some interest to many and that it will contribute to a better appreciation of one class of machinery that some may have been disposed to regard rather lightly.

The prejudice which has prevailed in some quarters against laundry machinery and the modern laundry system, as being destructive of the goods, is entirely incorrect and unwarranted. That bleaching compounds, the wash wheel, the wringer or the ironing machine may be converted into agents of destruction is, of course, true; but their normal function is to save rather than to destroy. The wringer might possibly do mischief, and so it is practically banished, the centrifugal machine doing its work quicker and more thoroughly. The best hotels and other institutions equipped with laundries, now generally enforce the rule that no piece of linen, towel, napkin, tablecloth, sheet or pillow-case shall ever be used a second time. If all the laundry work implied by this practice were to be hand work, the rate of destruction would be incomparably greater than with the mechanical appliances.—*The American Machinist*.

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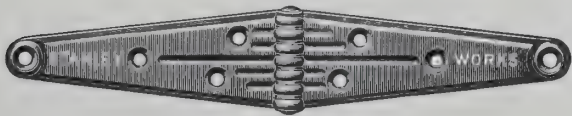
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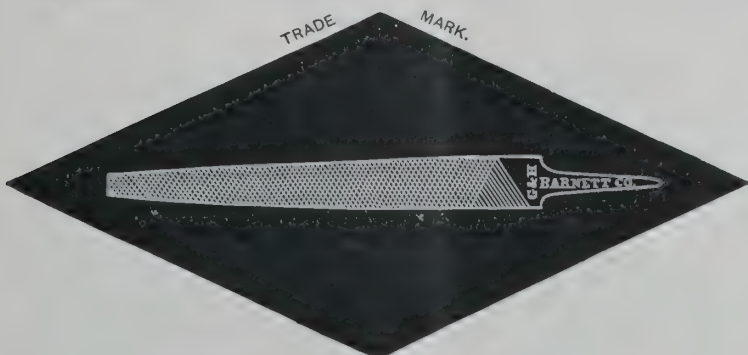
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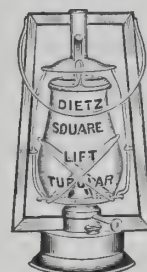
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NEEDS NO KEY.
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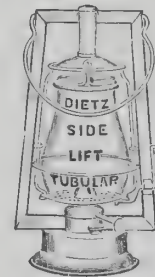
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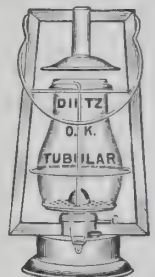
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The above illustrations show three of our principal No. 0 Tin Tubular Lanterns.
They are all well made of the best materials, with extra quality globes and burners.
The oil funnels are drawn from single sheets of tin, and afterward retinned. They are
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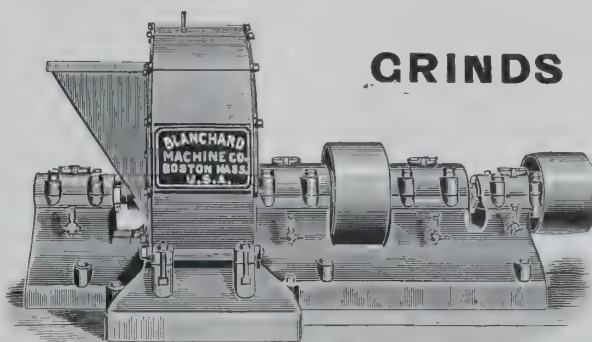
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Send on a trial order through your commission man, sending duplicate at the same
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GRINDS

Bones,
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and all similar
materials,

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Large capacity.
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This Machine Does Fly.

PROFESSOR LANGLEY, secretary of the Smithsonian Institution, thinks he has at last practically settled the flying-machine problem. For a long period he has been making experiments with a device of his own invention near Occouvan, Va. Much secrecy has been attached to these trials of the aerodrome, and the little that has leaked out has excited intense interest among scientific men throughout the world. Professor Langley has always been very guarded about the experiments, and the account of his latest attempts with the flying machine, embodied in the following statement prepared by Prof. Alexander Graham Bell, and published with the sanction of Professor Langley, will be of great interest to the scientific world:

"Last Wednesday, May 6th," says Professor Bell, "I witnessed a very remarkable experiment with Professor Langley's aerodrome on the Potomac River. Indeed, it seemed to me that the experiment was of such historical importance that it should be made public. I should not feel at liberty to give an account of all the details, but the main facts I have Professor Langley's consent for giving you, and they are as follows:

"The aerodrome, or 'flying machine,' in question was of steel, driven by a steam engine. It resembled an enormous bird soaring in the air with extreme regularity in large curves, sweeping steadily upward in a spiral path, the spirals with a diameter of perhaps 100 yards, until it reached a height of about 100 feet in the air, at the end of a course of about half a mile, when the steam gave out, the propellers which moved it stopped, and then to my further surprise, the whole, instead of tumbling down, settled as slowly and gracefully as it is possible for any bird to do, touched the water without damage, and was immediately picked out and ready to be tried again.

"A second trial was like the first except that the machine went in a different direction, moving in one continuous gentle ascent as it swung around in circles like a great soaring bird. At one time it seemed to be in danger, as its course carried it over a neighboring wooded promontory, but apprehension was immediately allayed, as it passed 25 or 30 feet above the tops of the highest trees there, and, ascending still further, its steam finally gave out again, and it settled into the waters of the river not quite a quarter of a mile from the point at which it arose.

"No one could have witnessed these experiments without being convinced that the practicability of mechanical flight had been demonstrated."

Professor Langley also made public a supplemental statement giving some important data regarding experiments. He said: "The aerodrome, or flying machine, has no gas to lift it, as in the case of a balloon, but, on the contrary, it is about 1,000 times heavier, bulk for bulk, than the air on which it is made to run, and which sustains it somewhat in the way in which thin ice supports a swift skater. The power is derived from a steam engine, through the means of propellers, but, owing to the scale on which the actual aerodrome is built, there has been no condensing apparatus to use the water over and over. Enough can be carried for only a very brief flight, a difficulty which does not belong to larger machines than the present example, in which the supporting surfaces are but about 14 feet from tip to tip. The distance flown each time was about one-half mile. The rate of speed depends (as in the case of any vehicle on land) on whether it is going on a level or up hill. In the case of this last trial of May 6th the machine was ascending, that is to say it was going up hill all the time, and went through a distance of one-half mile or more in one and one-half minutes, or at the rate of a little more than 20 miles an hour."—*N. Y. Sun.*

Exhibition Machinery.

FORTUNATE is the firm who take their machinery for exhibition purposes right out of stock. It gives a world of confidence to spectators to know that they are looking at just such machinery as they can buy on an order, finish and all.

Time was when it was expected that machinery at fairs would be much higher finished, and better in every respect than that supplied on order by the firm exhibiting. Now was not and is not this all wrong?

Men go to machinery exhibitions to see what is being built right along every day, and can be purchased on order, and not to see what it is possible to do "just for this occasion only," more in these times than formerly, and they insist upon buying just what they see, in all respects. The more this feeling prevails the more valuable will machinery exhibits become. For exhibitors to sell just such machinery as they exhibit is doing only as they advertise, for a large proportion of exhibitors exhibit, and properly enough, in the interests of the trade that it is hoped will come from it.

When men can go to exhibitions and see only such machinery as they can buy at the shop or salesroom it will be better for both those who propose to buy and those who propose to sell; they will have more confidence, at least the prospective purchaser will. When machines are exhibited for the purpose of showing the skill of the mechanic, they should be so labelled.

There are firms in America who take their exhibition machinery right out of stock, and so state. Many large firms do so, whether the exhibit is in the United States or in Europe.

—"By using the wide tires an average of fifty three pounds' draught is saved. A horse is computed to exert a pull of 150 pounds for ten hours when travelling at the rate of two and a half miles per hour. On this basis the wide tires save slightly more than one-third of the exertion of the horse."

First Needle Machine Now in Chicago.

CHICAGO will soon have the proud distinction of being the centre of the needle manufacturing industry of the world. The first needles to be made and sold in this country will come from Chicago, and America will no longer have to depend upon England and Germany for this important article of domestic life.

The first needle machine ever made is now in Chicago, having been brought here from Detroit, where it was built, a few days ago. It is now being perfected and repeated tests have demonstrated its practicability and great usefulness. It seems as perfect a piece of mechanism as was ever put together, and its inventor says there is little to do before the machine will be ready to manufacture needles at the rate of 2,500 an hour, or 25,000 a day.

The inventor is Eugene Fontaine, a Detroit man, whose invention of the pin machine in 1872 made him famous. Mr. Fontaine is an American, whose skill as an inventor of useful machinery is known the world over. He first conceived the idea of the needle machine soon after his pin machine was put in operation. Only within the past three years, however, has he given his time to the accomplishment of the plan which has finally led to the production of this most useful machine. About two years ago he completed his designs, and the time since then has been devoted to the work of putting up the machine.

When it is known that up to the present time there has never been a needle manufactured on this continent, the importance of Mr. Fontaine's invention may be realized. With the whole world for a market, England and Germany have thrived as needle centres. The needle industry of Great Britain is confined to Redditch, and here the better grades of needles are made. The Redditch needles sell at about \$1.20 per 1,000. The German needles are of a cheaper quality and are sent out all over the world. They cost about 75c. per 1,000. That Chicago is destined to become the great needle supply district for the world is demonstrated by the fact that the new machine will so cheapen the cost of production as to put both England and Germany out of the competitive field.—*Exchange.*

Transportation of Mining Machinery.

THE transportation of heavy mining machinery to points in new countries, not as yet accessible by water or rail routes, is frequently a matter of risk and always of considerable expense. Our own pioneer mining industries have had a costly experience in this matter, especially in the mountainous regions, where the pack mule and the teamster have had to traverse precipitous and unbroken roads, the declivities of gorges, and the treacherous fords of bridgeless streams. In many instances the track of the freighter has been marked here and there with abandoned or broken machinery, disabled wheels, or dead beasts of burden. In some of the remoter sections of the States or Territories, the transportation of heavy machinery is still attended with the same difficulties, the same risks, and the same disasters. In the Southern republics, where railroads are less common and mining camps remote and isolated from what there may be of public highway, the difficulties, hazards and the cost of transporting a machine are grave obstructions to the development of mining enterprises. The same may be said of some parts of Australia, and later we hear of the same impediments in South Africa. It has become a question with those more directly concerned in the costs and profits of gold-mining, as to whether many heavy losses are not due to the expense and difficulties of transportation. In a recent issue of *Machinery* it is suggested that cumbersome and heavy machines might in some cases be more lightly constructed, or shipped in pieces that could be readily put together at the point of unloading. This it is said has been done in the shipment of irrigation machinery, consigned to South America, India and other remote places. An instance is given of a portable steam pump complete with boiler, delivering 5,000 to 6,000 gallons of water per hour, capable of being transported over a rough country for miles by means of shoulder poles carried by a comparatively small force of men. Taking the suggestion for what it may be worth it is certainly deserving of the attention of mine managers and the manufacturers of mining machinery who may be interested in building up a foreign trade.—*Age of Steel.*

AT the Shoe and Leather Fair, London, the Flagg Manufacturing Company, Globe Buffer Company, and other of the Flagg companies, have their machines and other shoemaking devices on show. The new buffing machine, recently introduced by the Flagg Manufacturing Company, is in the list. The foreign trade of the Flagg Companies has always been a very strong feature. Not only in England, France, Germany and Switzerland do the companies carry on large operations, but in Australia and other foreign countries. During some portions of the past year, when business has been dull in this country, there has been a decided movement in the foreign trade of the companies managed by Dr. Flagg.

—It is reported that an average of 100 bicycles a day pass through the custom house at Toronto. The wheels are mostly of American manufacture, and can be sold in Canada after paying a duty of 30 per cent. at the same price and in many cases lower than the wheels made in Canada.

—C. L. Hawthaway & Sons, Boston, Mass., U. S. A., are having a very steady trade in the line of russet shoe polish, of which they are making a specialty the present season. In this connection it should be added that the firm's foreign business has shown a large growth during the past year and that they are sending abroad some very large shipments of the blackings, dressings, cements and similar lines of goods which they manufacture.—*Boot and Shoe Reporter.*



Puritan Highest Grade Bicycles.

UNEQUALLED AND UNAPPROACHED IN
DESIGN, MATERIAL AND CONSTRUCTION.

Most Popular Wheel for Export.

LIGHT.

STRONG.

FAST.

Send for Illustrated Catalogue "E."

Established 1850.

O. J. FAXON & COMPANY,

BOSTON, MASS., U. S. A.

MANUFACTURERS.



Johnston's Standard Kalsomine and Fresco Paints,

Ready for Use!

FOR WALLS AND CEILINGS.

Absolutely Reliable!

GOLD MEDAL, NEW ORLEANS, 1884-5.

EIGHT FIRST-CLASS AWARDS.

Cheaper than Wall Paper or Oil Paint.

Pure White and Beautiful Tints. Will not rub or scale from the wall. Invaluable in cleansing and disinfecting walls impregnated with germs of disease. Mixed in five minutes ready for the brush, by the addition of water only. Five pounds will cover with a good body 500 square feet on hard-finished walls. Send for sample card and prices to

DRY KALSOMINE AND FRESCO PAINT WORKS, 25 & 27 John Street, Brooklyn, N. Y., U. S. A.

Orders filled through commission houses. Correspondence solicited. Catalogue "J" on application.

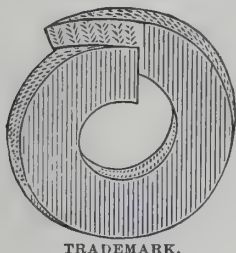
Bit Stock Drills,
Taper Shank Drills,
1/4 inch " "
5/8 inch " "
Drills, fitting ratchets
Etc.

Twist Drills made by this Company are **HOT FORGED** by an Entirely New Process



They are **TOUGHER** and **STRONGER** than the **OLD STYLE** Milled Drills.

Catalogues sent free
on
Application.



COULD'S STEAM AND WATER PACKING.

Patented June 1, 1880.—The Original Ring Packing.

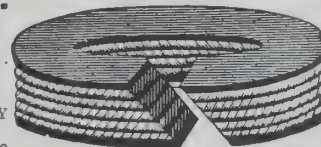
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM.
SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE COULD PACKING COMPANY, EAST CAMBRIDGE, MASS.

ORIGINAL RING PACKING

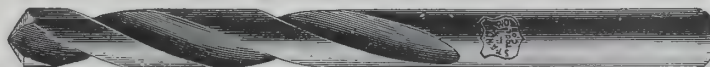


ALBION CHIPMAN, Treas.

The STANDARD TOOL COMPANY, Cleveland, Ohio, U. S. A.

MANUFACTURERS OF

Increase Twist Drills.



CATALOGUES SENT FREE ON APPLICATION.

Bit Stock Drills for Metal or Wood, Taper and Straight Shank Drills, Reamers, Sockets, Chucks and extra length drills for Electrical work.



Call for and insist on having
'96 Jenkins '96
stamped like cut.

'96 JENKINS '96

IS THE

Perfection of Joint Packing.

INSTANTANEOUS, DOES NOT SQUEEZE OUT

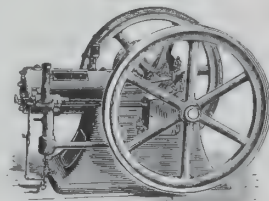
and not necessary to follow up joint. We guarantee it to last for years on any and all pressures of steam, or any kind of joint where packing is required. DOES NOT ROT, BURN, OR BLOW OUT, therefore the **BEST FOR ALL PURPOSES.**

JENKINS BROS., 71 John St., New York, U. S. A.

WEBER GASOLINE ENGINE

cubic feet gas per horse power per hour. The simplest, most economical and best power. No engineer required; no coal; no fire; no danger. Sizes, 2 to 50 horse power. (Special attention paid to secure packing in heavy cases for export). Goods delivered New York, San Francisco or New Orleans. Cable Address, "Webergas," Kansas City. State size wanted.

WEBER GAS & GASOLINE ENGINE CO., 425 S. W. Blvd., Kansas City, Mo., U. S. A.



Bernard's Patent Paragon Plier, Manufactured by The Wm. Schollhorn Co.,

9 inches long.



THE BOSS TOOL FOR BUILDING WIRE FENCES.

NEW HAVEN, CONN., U. S. A.

This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

Manufacturers of the Celebrated "Star Brand" Shears and Scissors, and "Elm City" Shears in large variety.

BEST QUALITY ONLY.

Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

Foreign Trade of American Machinery Builders.

THERE is a little joke connected with the foreign business of our tool and machinery builders, and one is likely to see this joke when he innocently makes an inquiry about the foreign business of any particular establishment. He usually finds that this particular house supposes it is doing about all the foreign business in its line, and that little or nothing ought to be said about it, because "the other fellows" (competitors) will find out about it and cut into the trade. Then if the inquirer goes to "the other fellows," he finds them talking the same way—the fact being that a good deal of foreign business is being done all around by live concerns, and most of them think the others are not doing much in foreign fields.

A very considerable proportion of the correspondence in this office now grows out of inquiries received from our foreign readers regarding American machinery and tools. We are constantly being asked to name the builders of machinery suitable for specified purposes, and it is quite common for these foreign correspondents to say that they prefer an American machine and wish to manufacture by American methods.

It is, of course, gratifying to us to know that we have been able to exert an important influence in the introduction of American machinery abroad; but the main point is that foreign users of machinery are very much alive to the merits of American machinery and tools and are rapidly becoming more so. It is our belief that it is to the best interest of every American machinery builder to develop this foreign trade as much as possible; but he should not assume that his neighbor is not equally well aware of this fact.—*American Machinist*.

Hints to Manufacturers.

WITH the opening of new trade with foreign communities the American machinery builder is beginning to learn the ways and preferences of a class of buyers who are willing to pay a large profit, but who insist on having it cover perfect delivery in every way. It has been frequently remarked on in these columns that the American way of packing goods, scheduling them and providing explicit directions as to adjustment and use, had much to do with superseding the clumsy methods of European sellers in such markets as Australia and South Africa. Barb wire and hardware specialties were notably in favor on this account. In heavy machinery too much care cannot be taken in catering to foreign buyers, especially where far-off purchasers have to be reached by roundabout routes, and the careful shipper eventually secures the bulk of trade. In the case of an engine, the same should be fixed to heavy skids, and what is practically a substantial house built around it, strong and secure against all possible battering of a long voyage and rough handling. Flimsy timbering will not do, for the engine is almost certain to suffer in transit. A lost governor means the loss of the shipper's reputation likewise; a battered and broken machine unaccompanied by adjustment directions, in a shape where the duplication of missing parts means a half-round the-world search, is to the new customer sufficient evidence of the unreliability of the seller. These new foreign buyers are willing to pay the highest price for what they want, but United States export machinery builders must always bear in mind that packing directions must involve something more substantial than a sheet of brown paper and a bit of string.—*Journal of Commerce, of Chicago*.

Dopp's New Catalogue.

MESSRS. H. WM. DOPP & SON, Buffalo, N. Y., the well-known manufacturers of soap-makers' and butchers' machinery, have issued another catalogue of soap presses, mixers, extract kettles, lard dryers, mixer and cooler. In their endeavor to supply the best of all machines in their line, this firm has now the agency of the excellent Taber pump, which is claimed to be unexcelled for use in the handling of soaps, oils and fats of all kinds. A perusal of this catalogue will be instructive to all interested.

THE STAR DRILLING MACHINE CO., of Akron, Ohio, U. S. A. have shipped one of their large drilling machines to Rangoon, Burmah, India, to be used there in the developing of the newly discovered oil fields of that country. This is another proof of the foreign appreciation of American machinery. In no other country has machinery for sinking wells for oil, water or for prospecting purposes been brought to such perfection as in the United States. Nowhere else is there such a large number of intelligent manufacturers engaged in this branch of industry, since the home demand for reliable and efficient machines of this class has been both great and exacting. The same kind of machinery is employed largely in sinking artesian wells all over the world, and the foreign demand is constantly increasing. By means of artesian wells water may be supplied in dry seasons and in arid sections for irrigating purposes, as well as for all other uses.

—The Snow Steam Pump Works, of Buffalo, N. Y., U. S. A., recently finished a shipment of seventy-five large and small pumps to Germany for refinery and other purposes. Parties in Australia have just placed a goodly order with them for sugar-house pumps, which follows up a shipment made some weeks ago to the same firm. A refining company in France has, within two weeks, sent them an order for a complete set of pumps for a new sugar house, which duplicates for the second time their original order, given some six months ago. They find it necessary to run their large plant night and day.

Fine Scoops for Export.

THE PHILADELPHIA SCOOP CO., 148 North Second Street, Philadelphia, Pa., U. S. A., has sent us an illustrated catalogue of the goods made by that firm, which is one of the largest manufacturers of scoops in the world. This catalogue contains descriptions of all the different kinds of scoops made by them, and should be in the hands of all dealers and importers in foreign countries.

One line of their scoops that is worthy of special mention is the indestructible galvanized scoop made from the best Bessemer steel, formed in gray and galvanized afterwards by special process which retains all the temper of the steel, and at the same time covering every part and imparting strength heretofore not known in this class of goods. These scoops are having a large sale in the United States, and orders are now being received from all parts of the world. This company manufactures exclusively for large buyers, and their goods may be had of any export jobbing or commission house by asking for scoops with their trademark. Their catalogue gives dimensions, capacity and price of each kind of scoop according to number, thus making it very convenient for the importer to order the same. Besides steel scoops they make a line of brass, re-tinned and nickel scoops, bag fillers, candy trays for confectioners' use and other specialties, all of which may be found in the catalogue above referred to.

Foreign Steel Displaced.

EVERY coin stamped at the United States Mint at Philadelphia is minted with steel made in Pittsburg, Pa., U. S. A. Every blank is cut out from the sheets of gold, silver, nickel and copper from the same quality of steel. This is said to be a case where steel of American manufacture has after long and patient effort succeeded in displacing a foreign-made article. From the minting of the first coin at Philadelphia all coins were minted with dies made of steel made in Sheffield, Eng., until last year. The steel used is of the highest grades, either Mushet or Jessop. The vast amount of labor put on the dies before they can be used makes them highly expensive. For this reason only the best steel is used.

Last Summer the Pittsburg Tool Steel Company furnished steel for a set of dies, and guaranteed the Government against loss if it failed to prove satisfactory. Dies were made and tried. The results were astonishing to the mint officials. They stated that during the months of October, November and December, \$40,000,000 in double eagles (\$20 coins) were minted with one set of dies, and they required sharpening but three times. Since that time all the steel that is used in the mint has come from Pittsburg, and a large order was shipped recently. In a letter accompanying the order the mint officer stated that American steel had entirely displaced British steel in the mint for stamping purposes.

THE DEANE STEAM PUMP CO., whose advertisement appears on another page, has received contracts for seventeen pumps to be used in the equipment of gunboats being built in this country for the Government of Colombia, South America.

COMPLETE statistics gives \$628,689,505 as the value of the mineral and metal production of the United States for last year, an increase of 15½ per cent. over 1894. For many of the articles included the output was the highest on record, gold reaching the enormous total of \$46,830,200, and silver a commercial value of \$30,254,296. We outdistanced Great Britain on pig iron some 2,000,000 tons, while our coal production, reaching nearly 200,000,000 tons, put us very near the tonnage of that country, while showing a gain of 26,468,000 tons over the preceding year.

THE ILLINOIS PURE ALUMINUM COMPANY, Lemont, Ill., are experiencing a large export demand for their pure aluminum household utensils. Recently the firm shipped two considerable consignments of these goods, one to Australia and one to South Africa, in response to orders. They have now on hand a number of other substantial foreign orders and expect to receive more in the near future. The company are constantly bringing out new goods and at the present time are manufacturing a wide range of aluminum cooking and household utensils. They are paying special attention to the manufacture of hotel goods in aluminum, and have lately filled some heavy orders from several of the leading hotels of the country. They are now engaged upon the construction of the largest aluminum steel-jacketed kettle ever turned out, it is stated, which is destined for trial in the Hotel Waldorf, New York City. The Illinois Pure Aluminum Company's New York City office is located at 274 Church street.

—The Goubert Manufacturing Company has opened a branch office at 1403 Monadnock Block, Chicago, Ill., U. S. A., and have placed in management there Mr. E. Webster, a well-known expert in steam appliances.

—Daley & Son, 39 Vesey street, New York, last month shipped laundry machinery to Sydney, N. S. W.; Lisbon, Portugal; Larne, Ireland; London, England; Port Spain, Trinidad, and the City of Mexico.

—Many merchants use wrapping paper which comes in rolls which are attached to a suitable device on their counters; they would also like to have their business stamp on each wrapper, which has heretofore been impracticable. Dwight F. Walker, Philadelphia, Pa., U. S. A., has, however, overcome the difficulty by his invention of a rubber stamp which is attached to the cross bar under which the paper is delivered, by which, with a slight stroke, the stamp can be affixed at any point of the wrapper as it is drawn out.



DR. J. C. AYER & CO.'S STANDARD FAMILY MEDICINES.

Approved by the Profession.

Full directions, in various languages, accompany each bottle of our medicines.

Ayer's Cherry Pectoral,

For the rapid cure of Diseases of the Throat and Lungs.

Ayer's Sarsaparilla,

For purifying the Blood and the cure of Scrofulous Diseases.

Ayer's Ague Cure,

Warranted to cure all Malarial Disorders.

Ayer's Hair Vigor,

For Restoring gray hair to its Original Vitality and Color.

Ayer's Cathartic Pills,

The most valuable Home Remedy for all Purgative Purposes.

Prepared by Dr. J. C. AYER & Co., Lowell, Mass., U. S. A. Dealers liberally supplied with almanacs, show cards, and other advertising material.

ARCHITECTURAL SHEET METAL WORKERS



Enhance the beauty of your dwellings and business houses with metal trimmings.

Pediments, Cornices, Window and Door Heads, Bay Windows, etc., of sheet metal (galvanized, iron or copper) are handsome, light and inexpensive. We have furnished the export trade satisfactorily for years. Write us for information and estimate.

Gara, McGinley & Company,

25 So. 17th St., Philadelphia, Pa., U. S. A.

THE PULVER

AUTOMATIC IN ACTION QUALITY NEVER CHANGES

FOR ALL KINDS OF MARINE AND STATIONERY MACHINERY.

WILL NOT DRIP WILL NOT FREEZE

LUBRICATING COMPOUND

SPECIAL HIGH GRADE OILS

PETERS & SONS DYNAMO MACHINERY

FRANKLIN ST. N.Y.

* The above article, with a record of a quarter of a century's continued use and sale in the markets of the world, guarantees perfect satisfaction wherever used. The very highest grade of materials is used in its compounding. Price very low. Quality very high. Send for catalogue telling you more about it.

THE HARRINGTON & KING PERFORATING CO. CHICAGO.

METALS PERFORATED AS REQUIRED FOR

SCREENS OF ALL KINDS

FOR USE IN

Milling and Mining Machinery,	Stone, Coal and Ore Screens,
Reduction and Concentrating Works,	Stamp Battery Screens,
Woolen, Cotton, Paper and Pulp Mills,	Brick and Tile Works, Filters,
Rice, Flour and Cottonseed Oil Mills,	Spark Arresters, Gas and Water Works,
Sugar and Malt Houses,	Oil, Gas and Vapor Stoves,
Distilleries, Filter Presses,	Coffee Machinery, etc., etc.

STANDARD SIZES PERFORATED TIN AND BRASS ALWAYS IN STOCK.

Main Office and Works: 222-240 North Union St., Chicago, Ill., U. S. A.
Eastern Office: No. 284 PEARL STREET, NEW YORK.

WHEN YOU BUY A PAPER CUTTER, GET THE BEST.

THE PARAGON

PAPER AND CARD CUTTING MACHINES.

IN USE TWENTY YEARS.

EVERY YEAR BETTER, AND ABSOLUTELY IN EVERY RESPECT

The Best Machine Made.

All Sizes have Traverse and Side Gauges. They have BROAD CLAMPING SURFACES for general use, yet the Stock can be Gauged to a HALF INCH from the Knife on the Smaller Sizes, and to within Three-Fourths of an Inch on the 30 and 32 Inch Machines.

PRICES.	
14-Inch	\$45.00
22½-Inch	80.00
25-Inch	110.00
30-Inch	175.00
32-Inch	200.00

ANY LENGTH OF PAPER CAN BE HANDLED IN FRONT OF THE KNIFE ON THE 25-INCH AND SMALLER SIZES.

THE E. L. MILLER COMPANY,

PATENTEES AND MANUFACTURERS.
328 VINE STREET, PHILADELPHIA, U. S. A.
FOR SALE BY ALL TYPE FOUNDERS AND DEALERS.

New Jersey Copper Paint

LEADS THEM ALL,
So our testimonials say.

We guaranteed this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from American Institute, New York City.

NEW JERSEY RED COPPER,

For yachts. Brightest color made.

NEW JERSEY SEAM PAINT,

A perfect substitute for pitch

NEW JERSEY PAINT WORKS

HARRY LOUDERBOUGH, Proprietor,
JERSEY CITY, N. J. U. S. A.

REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shya."



"Keystone" Power Corn Shellers

Are guaranteed to be unsurpassed in amount and quality of work, power required and durability. Valuable improvements have recently been perfected.

6 HOLE,
4 HOLE,
2 HOLE
"KEYNOTE"
ARE
SELF-
FEEDING.



"X. L."
"KEYSTONE"
"PONY"
ARE FOR
POWER
OR
HAND USE.

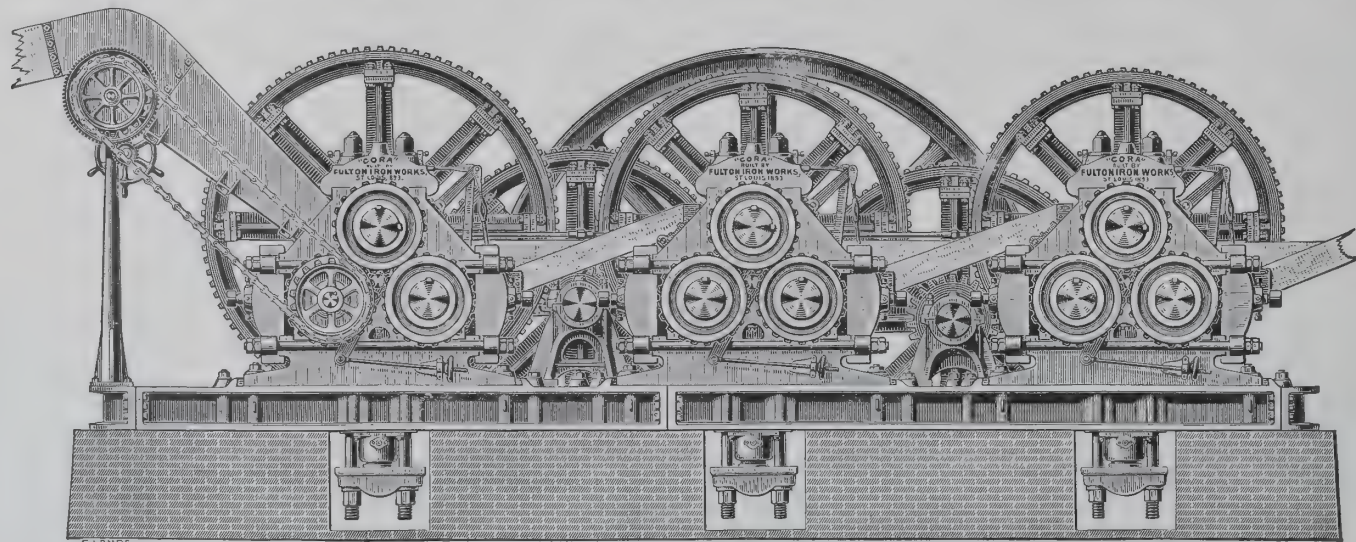
Made by
KEYSTONE MANUFACTURING CO.,
STERLING, ILLINOIS, U. S. A.

SEND FOR DESCRIPTION AND EXPORT PRICE LIST.

Address Export Office,
KEYSTONE MANUFACTURING CO.,
B, 19-21 Produce Exchange, New York, U. S. A.

"CORA" Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by **"FULTON IRON WORKS,"** St. Louis, Mo., U. S. A.

Per S.S. "COPTIC."

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

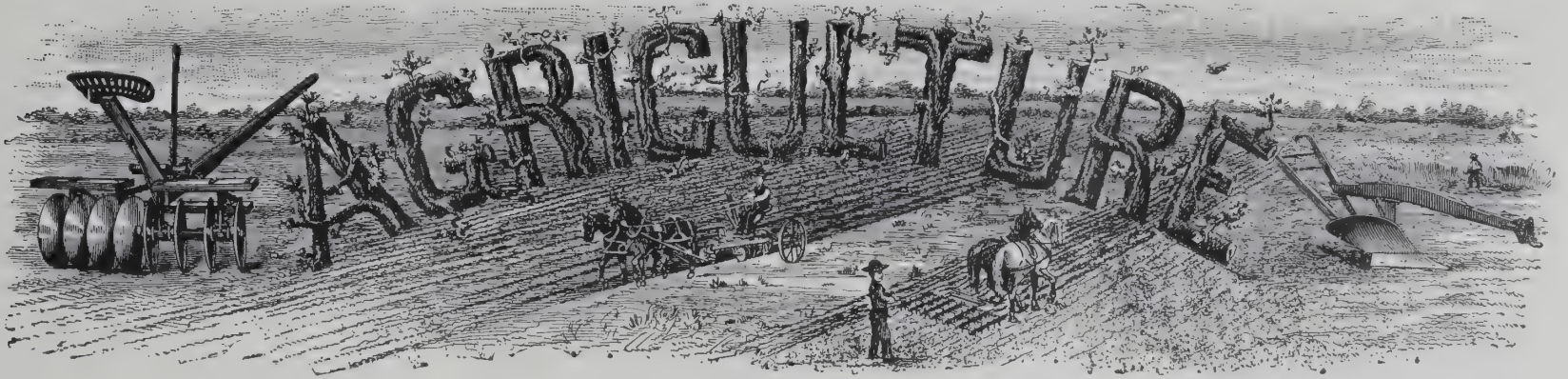
Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104³/₄; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

Farming in America.

IT must not be forgotten that in spite of the great manufacturing population of America she is an agricultural country, her people numbering over seventy millions, and that she possesses nearly one hundred thousand miles of railway, or 26.7 miles per ten thousand of her population, whereas in this country we have but twenty thousand miles, or only 5.3 miles per ten thousand people. Again, 66 per cent. of the farmers of the United States own their own land. There are 4,767,000 farms owned and hired. Of these 3,142,000 are owned, 886,000 of this number being encumbered. It must, however, be added that the hired farms are chiefly in the Southern States, where corn and stock are comparatively small items, while the mortgaged farms are principally found in the great corn and stock States. Upon the average, the encumbered farms are mortgaged to the extent of 35½ per cent. of their value. Canada has a smaller population, but as regards railway accommodation she stands next to the United States in mileage to population. The facilities which have been provided for the acquisition of land in Canada have enabled the vast majority of her farmers to become owners of their farms. In the year 1893 we paid the United States sixty-five millions sterling for agricultural produce, or more than half the value of the whole of her agricultural exports, and yet the depression in agriculture in the United States, as in Canada, is severe. It has been officially laid down that the depression is chiefly owing to overproduction, the area of wheat land in particular increasing much faster than the population. There are, however, two great contributory causes—cheap money and increasing railway accommodation, which means cheap freight. The cost of production of an acre of wheat on many of the chief lands of the Western States, as shown by the president of the State Board of Agriculture of California, is as follows:

	s.	d.
1. Cost of preparing land.....	6	3
2. Seed, 80 lbs.....	2	0
3. Sowing.....	2	1
4. Harvesting.....	4	2
5. Hauling.....	2	6
Total.....	17	0

Rent or interest is left out of the question. On the basis of a yield of sixteen bushels the cost of production appears to be about 13d. per bushel, so that any excess obtained is profit. The method adopted on some of the large farms of Dakota enables the producer to grow wheat at 1s. 5d. per bushel. With one team a single man can plow six acres per day with a gang plow, while with a broad cast seeder and an eight-horse harrow twenty acres are sown and covered. The combined harvester with an 18 foot sickle will cut from twenty-eight to thirty acres in a day, and thresh from 800 to 900 bushels, at a cost, including wear and tear, food and wages, of a dollar per acre. Dairy farming is rapidly extending. In Canada a bonus has been offered on the production of butter for export, and the cheese industry is under the wing of the Dominion Government. In both countries cheese is branded with a guarantee of quality, severe laws have been passed for the suppression either of margarine manufacture or of its employment as an adulterant, while in many parts of the American continent a high milk standard exists, which has immensely protected the farmer, who is also assisted to obtain pure manures. With the great system of State colleges and farm stations, and the Government aid given to agriculture in both Canada and the States, it is not surprising that a vigorous people should run the old world hard.—*From the Mark Lane Express, London.*

Ground Bone.

IT is surprising to consider how rapidly cut bone has come into use within five years, many establishments using power machines and grinding by the wholesale for the supply of all "henmen" of their respective neighborhoods; and it is certainly reasonable that ground bone should be highly esteemed. It comes pretty near being a perfect food, containing everything for the egg, shell, white and yolk. It is also a cheap food, as the bones can be bought usually for one-half cent per pound, which is cheaper than grain. But, of course, it is not intended to substitute ground bone for grain; both are needed. A variety is always important. But as a source of animal food, that laying hens so much crave and need, ground bone is without a rival.

—Hench & Dromgold, York, Pa., U. S. A., recently shipped thirty corn shellers to Vera Cruz, Mexico, and one carload of harrows to Pelotas, Brazil.

Will Corn Run Out?

IT has often been argued to us that corn will eventually run out if the same kind of corn is planted over and over again in the same field or locality. Our experience does not bear out such a statement. We have planted seed of corn raised in the same field for ten consecutive years, and the last crop was better in every way than any of the preceding ones. We claim that this was greatly due to our method of selecting our seed corn. It is not an easy one, but it pays well in the end. This is the way we do it:

In the Fall of year as soon as the corn is thoroughly ripened, and, if possible, before there is any frost, we take a sack and go into the cornfield and select such ears as best conform to our ideal corn. In this process we also take the size and condition of the stalk into consideration. To illustrate—if we find a nice ear on a weak stalk, although it may be well matured, we reject it; or if we find an ear on a stout stalk which is too green, as compared with the others, we pass that by; or if we find an improperly formed ear on a stout and well-matured stalk, we refuse that also. We select only such ears as are grown on good, well-matured stalks, and the ears themselves must be of symmetrical shape and well matured.

When we get a sack full of seed corn we carry it out to a place where it can be loaded into a wagon and hauled to the granary or some suitable place where it can be hung up to dry thoroughly before cold weather sets in. In preparing the corn for thus storing away we take a piece of binding twine about eight feet long, double it, holding the ends even, then place an ear in the loop thus formed and tie it with a single knot. On this we put the next ear, and tie the same as before. In this manner we continue until the string is full, and then hang it up by placing across a stout pole or scantling. All this, of course, is hard work, and if the weather is very warm it is hot work, too; but then it saves lots of trouble at planting time. Besides that, when we select our seed corn as just described we know that it will grow beyond a doubt.

There is another fact worthy of notice, and that is that corn which is grown from seed secured according to the foregoing method has more vitality than that which is grown from seed selected out of corn which has been piled up all Winter in a crib or bin. This we saw conclusively verified last year. It was as follows: One of our neighbors was planting some corn on some low land nearby, and as it happened he ran short of seed, so he went to our corn-pen and got enough corn to finish planting his field. The dry weather set in just about the time he finished planting. Now, as to the results. The seed which he planted of his own corn did not make half a stand, while that seed taken from our corn all came up and grew better than that of his own seed. In conclusion we wish to say that we do not believe that corn will run out or deteriorate in quality if proper care is taken in selecting the seed at the proper time.—*The Epitomist.*

Noted American Machines at the Paris Show.

AMONG the American machines and implements at the annual Paris show, held in March, that particularly attracted the attention of European visitors on account of their new and improved features, were the harvesting machines of the Deering Harvester Company, Piano Manufacturing Company, McCormick Harvesting Machine Company, Walter A. Wood Mowing and Reaping Machine Company, D. M. Osborne & Co., Adriaance, Platt & Co., Johnston Harvester Company, and Massey Harris Company, Ltd.; plows of the Oliver Chilled Plow Works; potato planter of the Aspinwall Manufacturing Company; Planet Jr., horse hoe, etc., of S. L. Allen & Co., and tedders and horse rakes of D. M. Osborne & Co. American manufacturers were more than usually well represented, showing that they are giving increasing attention to European trade.

American Starch Ahead.

DR. SAARE, who was sent to the United States at the instance of the German Starch Producers' Association, to inquire into the starch industries in America, has returned and made his report to the Government. The main cause of the increase of American competition against the German is not, he says, that the American product is of better quality, but that the price is cheaper, a condition due to the concentration of the American industry. He recommends that German manufacturers combine as have the Americans, or otherwise they will be beaten out of the market.

The Dairy.

GOOD cows, well tended, lie at the foundation of successful dairying. Every cow of mature age, to find a place in a progressive dairyman's barn, must produce 300 pounds of first-class butter every year. The work of dairying is close, confining and unremitting; and the dairy farmer certainly has good right to fair compensation for all his trouble. He will not be paid, however, unless he keeps well posted and pursues the best and most modern methods. The good cow does her best only when supplied with a variety of grains. Corn meal, bran, linseed meal, and cottonseed meal as well as oats are all low, and these grains will form fine rations for the dairy cow. They may be mixed in various proportions as, for example, take eight parts bran, four parts cornmeal, two parts ground oats, two parts linseed meal and one part cottonseed meal; or use four parts bran, four parts ground oats, four parts cornmeal, one part linseed, and one part cottonseed. Feed each dairy cow two feeds of grain per day, giving all the way from four to ten quarts per day. Some deep, heavy milkers will require more feed than will some others to keep in good flesh and condition. The feeder alone can determine what is the most profitable ration for each animal. For coarse fodder, ensilage, clover hay, corn stalks and millet will work in all right. It is a good idea to cut fine a portion of the hay, moisten it and mix with the grain. By this method the grain becomes more finely divided, and the digestive fluids have a better chance to act upon it. Cleanliness is the great watchword for the dairy. We must have clean barns, clean milk vessels and clean dairy-rooms. It is very easy to get careless. Where we perform the same work over and over again, day after day, we are occasionally afflicted with tedium and get to slighting neatness; but it is a costly kind of slight, for milk and butter quickly absorb odors and deteriorate rapidly under bad influences. The cow stable is to smell wholesome. This is to be attained by promptly removing the manure and using freely good absorbents and disinfectants, such as dry earth, sifted coal ashes, etc. An ill-ventilated barn is unhealthy for any species of animal life. Another item for the dairy cow is exercise. We firmly believe in a rational amount of exercise for dairy stock, notwithstanding the opinions of some writers upon this subject. The cow, like other animals, is invigorated by breaths of pure outdoor air, which stimulates every function into action. To house cows all Winter and never let them inhale the invigorating oxygen is plainly, to our mind, absolutely abnormal, unnatural and unwise. Let them out about noon for an hour or so upon all sunny, pleasant days. When it is cold and bleak the airing may be omitted.—*Epitomist*.

To Capture Oriental Trade.

THE project to establish an American-Chinese Chamber of Commerce at Shanghai, the principal mart of China, the success of which is now practically assured says the *Chicago Herald*, is the result of recent investigations of the vast possibilities of the country as a rich market for American goods, and is in consonance with a recommendation in the consular reports of Ex-Consul Edward Bedloe, formerly United States Consul to Amoy and Formosa, China.

The establishment of this chamber of commerce for the exhibition of American wares under the auspices of American enterprise is significant of the aggressive fight which American manufacturers are about to inaugurate for the control of the Oriental trade. It is true that China is a thousand years behind the times and that her civilization has not been sufficiently advanced to create a demand for the products of American mills. But there are signs of a great awakening in the celestial empire. China and the Orient comprise a vast field of commercial enterprise which is now being opened, where we can have an uninterrupted commerce with one-half of the human race.

The reason our business relations with this vast empire have been in such a deplorable condition for many years is because the Mongolians have had little opportunity to become acquainted with American wares. Great Britain has largely controlled the trade of the Orient. It is a significant fact, however, that wherever the Mongolians have had an opportunity to test and use the products of American factories they have been quick to evince a marked preference for them over British and other inferior wares.

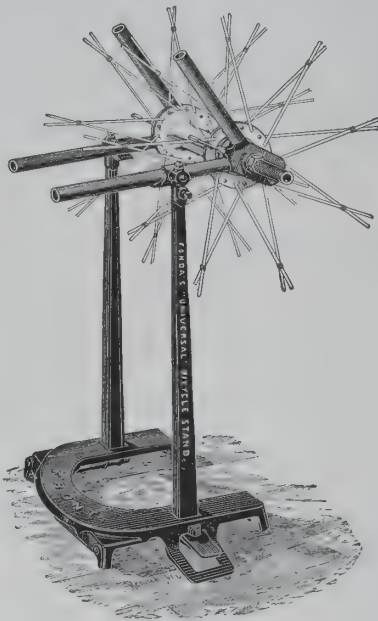
The British shrewdly take advantage of this by imitating our wares, fabrics, firearms, cartridges, etc., and even go to the extent of counterfeiting the labels used by certain well-known American factories, as shown in Consul Bedloe's reports. American kerosene oil is known to be so popular with the Chinese that English firms have long made a business of collecting the American cans and filling them with the inferior Russian oil. Some years ago a Connecticut manufacturer of firearms sent a special agent to China to investigate the reported imitations of their product, which he found were being made in Great Britain and covered with American labels.

THE NATIONAL STARCH MANUFACTORY is now running, using more corn a day than at any time in many months, converting 4,500 bushels of corn a day into starch. The cerealine mills and hominy mills are running very steady, among them all requiring over 11,000 bushels of corn a day. In both lines there is a better export trade than a few months ago.—*Indianapolis (Ind.) Journal*.

—A new trolley wheel has been invented so as to avoid the vexatious delays caused by the present trolley wheel jumping the wire, as it frequently does. This new invention provides a spiral groove on each side of the wheel. When the wheel, from any cause, jumps the wire it is carried back into its proper place automatically. The groove extends on each side about 3 inches, which meets the emergency in 99 cases out of 100.

Fonda's "Universal" Bicycle Stand.

WE invite the attention of our readers to this new bicycle stand. The maker, H. K. Porter, of Boston, Mass., claims that it has been well received by both the trade and bicycle riders and he wishes our readers to critically examine its merits. This stand consists of a horseshoe-shaped base with four bearings on the floor so that it cannot be easily tipped over. From this base



spring two uprights, whose upper ends are moved toward each other by a spring concealed in the base, and away from each other by pressure on the foot step which is shown in the cut. When the bicycle is placed in this stand its rear wheel is raised clear of the floor so as to revolve freely, thus facilitating the cleaning or repairing of the wheel, sprockets, cranks and pedals. All of these parts may be removed if desired, the front wheel taken out of the frame and the ends of the forks let down upon the floor, as the rubber-covered hooks turn in swivels.

It will be seen by referring to the illustration that in placing a wheel in this stand it is not necessary to touch it with the hands. The uprights are spread by the pressure of the foot on the step and allowed to close together until the rubber-covered hooks grasp the side tips near the rear wheel. This stand will hold any wheel, ladies' or gentlemen's, without any change of adjustment. It is always ready for use and is claimed by many to be the best stand made, not only for repairing and cleaning the machines but for displaying them in stores or keeping them at home.

Fuller particulars may be obtained from the manufacturer.

Electric Street Cars for South Africa.

THE J. G. BRILL CO., of Philadelphia, Pa., U. S. A., has recently filled an order for electric tram cars for shipment to Cape Town, South Africa. One of these cars was illustrated and described in a recent issue of the *Street Railway Journal*, which described it as having a seating capacity of 64 passengers, 32 below and 32 above, with seats arranged transversally. The car is mounted on traction pivotal trucks, and equipped with 50-horse power motors.

The interior woodwork is ash and cherry finished in the natural colors and handsomely varnished. The inside of the lower deck is ceiled with three-ply veneer, beautifully decorated. The windows have double sash, the top one stationary and the lower arranged to drop. The car has a stairway at both ends and a suitable platform projection for accommodating the motorman, controller and brake apparatus outside of the step landing.

This is the description of the largest car furnished to the Cape Town Co. The order also included a closed car of smaller type, 17 feet 6 inches long and having a seating capacity for 50 passengers. This car was finished the same as the one above described. The manufacturers furnished also a smaller type of car to the Cape Town Co. which was practically the same as the above with a seating capacity for 44 passengers.

These are the first electric motor street cars made by this company with double decks and transverse seats, the usual way being to run a row of seats longitudinal, back to back, with aisles on both sides. By this new method the seating capacity of the roof is materially increased.

In addition to the cars, the J. G. Brill Co. also furnished the power plant complete, being 300-horse-power condensing engines made by the Philadelphia Engineering Works, and Westinghouse multipolar generators, three 300-horse-power boilers, switchboard, pumps, economizer and live steam purifier.

This is another evidence of the preference for American street cars for foreign countries. There is now scarcely a single city of any importance in the wide world that has not one or more street car lines, and the majority of these are equipped with American made cars.

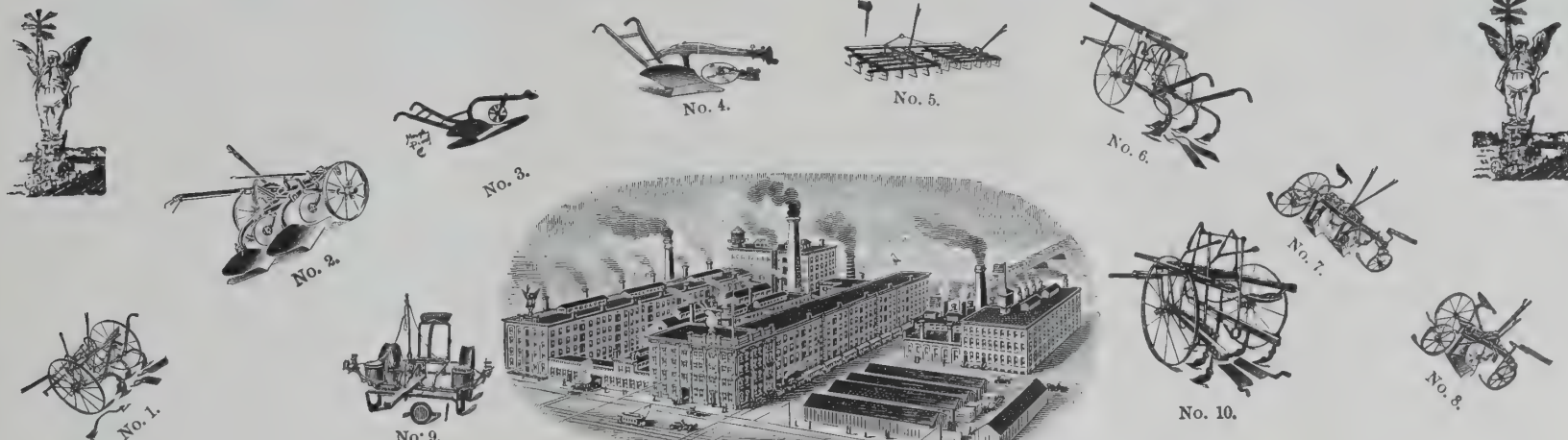
THE steam mangle, used for "mangling" bed linen, tablecloths, etc., is one of the latest and greatest of laundry machines. The goods are conveyed to the rolls of this machine by means of a travelling apron. It is claimed that by using this machine one person is enabled to iron from 450 to 500 heavy Austrian linen sheets in an hour.

—A bicycle manufacturing company in Thompsonville, Conn., recently received an order for 2,000 wheels from a house in Russia.

—The South American Light, Power and Traction Company, of Lima, Peru, has just placed a contract with the General Electric Company of New York, for the installation of a 5,000 horse-power electrical plant. The dynamos will be erected at the waterfalls 11 miles from Lima, and the electric power generated will be transmitted to the city where it will be used to operate the surface railways and electric lights and furnish to the public generally such electric power as may be required. This will be the largest installation of electricity in South America.

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U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
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Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes. Beet Machines. Etc.No. 1. Dandy Combined Riding and Walking Cultivator.
No. 2. Wheel Walking Gang Plow, 24 inches.No. 3. Steel Beam Plow with Rolling Coulter S. B.
No. 4. Wood Beam Plow with Rolling Coulter.No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

F. O. B. NEW YORK.

Foreign Agencies:

PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.

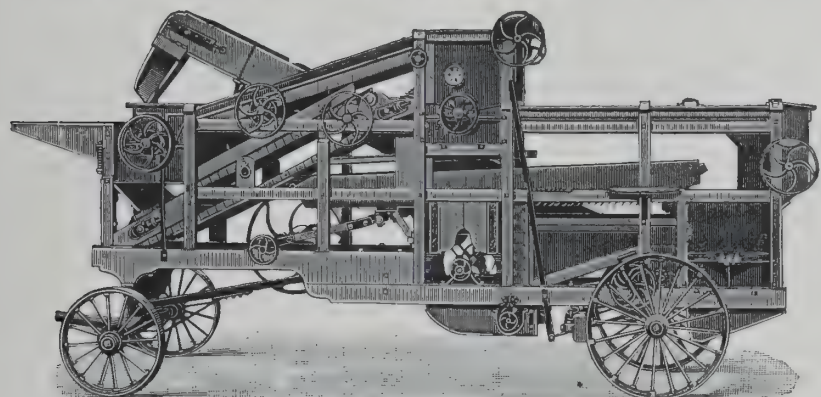
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**Thrashing Machines, Saw Mills,
STATIONARY, PORTABLE AND TRACTION ENGINES,
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**Write us for DETAILS, PRICES and ANY DESIRED INFORMATION.****Is SUPERIOR to "CORN STARCH," "ARROWROOT," "SAGO," Etc.****TRADE MARK.**
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(DURVEA.)Gold Medal Awarded
"MAIZENA."Paris Exposition,
1889.

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

ENCOMIUMS TO ITS MERITS:

LONDON, 1862. "Supremely Excellent."

BRUSSELS, 1876. "Notably Excellent."

PARIS, 1877. "Perfection in Preparation."

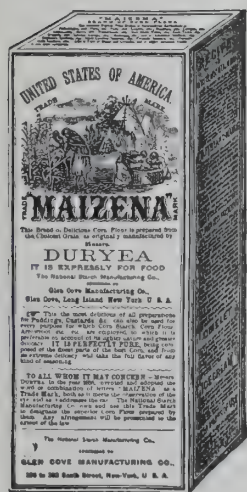
CENTENNIAL, 1876. "Notably and Absolutely Pure."

PARIS, 1878. "Best Produced of Its Class."

FRANKLIN INSTITUTE. "Superior Merit."

Put up exclusively by THE NATIONAL STARCH M'FG CO., successor to (Messrs. DURVEA) GLEN COVE MANUFACTURING CO., N. Y. U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and 1/2 lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

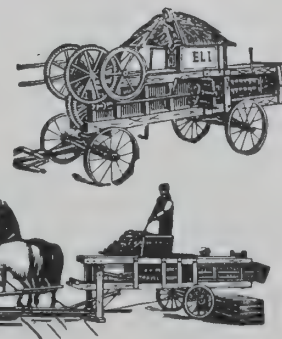
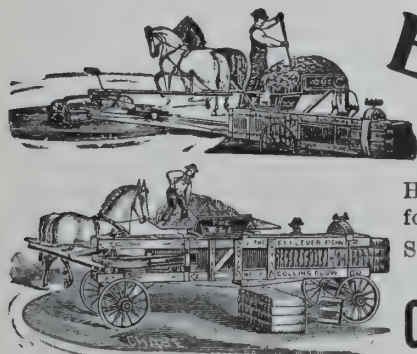
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**HIGHEST AWARDS WORLD'S COLUMBIAN EXPOSITION.**We make the most rapid **Hay and Straw Press** in the world.
Also manufacture **Harrows, Cultivators** and 140
different shapes and sizes of Riding and Walking**PLOWS.**

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All kinds of
Hay and Straw Presses
for Horse and Steam Power.
Special attention to Export Trade.

ADDRESS,

COLLINS PLOW CO.,QUINCY, ILL.,
U. S. A.

Our Increasing Export Trade.

THE foreign demand for American manufactured goods is greater this year than ever before. The following table of exports in some special lines for the month of March, 1896, as compared with those for the same month last year, makes a showing that must be highly gratifying to all who are interested in the development of the foreign trade of the United States:

	March, 1895.	March, 1896.
Art works	\$43,641	\$52,663
Blacking	24,250	35,729
Brass and manufactures of..	54,326	100,405
Brooms and brushes.....	9,590	17,168
Candles.....	15,721	26,466
Carriages and street cars.....	140,963	181,360
Clocks and watches, and parts of	108,711	125,468
Glass and glassware.....	81,517	97,363
Glue.....	8,640	13,763
Scientific instruments and apparatus	132,612	196,673
Builders' hardware.....	231,222	256,190
Saws and tools.....	166,952	206,331
Machinery	974,954	1,242,912
Fire engines		1,700
Boilers, and parts of engines.....	12,919	36,555
Printing presses, and parts of.....	13,683	45,399
Sewing machines, and parts of.....	204,738	220,581
Jewelry	75,263	111,079
Boots and shoes.....	97,938	138,466
Harness and saddles.....	13,489	16,959
Organs	51,432	57,136
Pianofortes	14,307	24,639
Other musical instruments.....	17,523	28,680
Paper, and manufactures of.....	177,871	227,614
Butter.....	100,364	200,496
Starch.....	54,286	94,887
Trunks and valises.....	8,970	10,021
Varnish.....	32,184	38,821
Doors, sash and blinds.....	26,791	34,392
Moldings and trimmings.....	15,943	19,449
Carpets.....	22,549	27,370

Redwood to Europe.

IT has taken a long time for Europe to discover the beauty of the California redwood for the interior decoration of houses, but England has at last made the discovery and is loading ships at San Francisco with the lumber. It is sent in the form of thick, broad slabs, presumably green, and is to be worked up in the desired forms by English artisans.

The more familiar Englishmen become with the strange qualities and uncommon beauty of this remarkable wood the more abundantly will they order it. They will probably make a great many blunders in handling it before they have learned its peculiarities, but wisdom will come with experience. They will learn that, unlike all other woods, its shrinkage in drying is longitudinal rather than transverse; that while it is very light when dry, it is exceedingly heavy when green; that though soft, it dulls edged tools rapidly, being in the latter regard different from all other coniferous lumber, and that it splits easily and in straight lines. If it is not thoroughly dried before working it loses the smoothness left by the plane, but once well dried it can be easily given a surface as smooth and as easily polished as mahogany. In color it resembles that wood more than any other, and, though not so deep and rich, has a softness of tone that no other wood can equal. Under varnish it looks bold and harsh, while careful hand finishing gives it a gentle lustre of incomparable beauty.

After our English cousins have learned the beauties and peculiarities of straight redwood they will seek the wonderful pieces of wood that lie in the base of the tree. This is called burl. Timothy Hopkins has the finest collection of this formation that exists, and at all the fairs where it has been exhibited it has attracted eager attention. In the burl the ordinary straight grain of the tree is compressed into a tangled mass of twisted and interlocked lines and has great density and hardness and a rich, deep color. It is susceptible of a polish equal to that of glass, and this reveals its remarkably distorted texture. Transverse sections made into table tops are surpassingly handsome.

The introduction of redwood into England will be followed by a demand for it throughout Europe.—*San Francisco Call.*

“THE Keystone hay loader for quick work in the hay field” is the legend on the frontispiece of the illustrated circular issued by the Keystone Manufacturing Company, Sterling, Ill. It shows the Keystone hay loader in operation, and mentions that two of its merits are “quick haying” and “prime quality,” something that means much to both dealers and farmers.

—The largest shipment of paper ever made from New York to a foreign port was made the other day, when an order amounting to more than \$15,000 worth of paper was sent to Melbourne.

—Indications are not wanting that the manufacturers of the United States are fast outgrowing the idea that their energies need to be bound by the limit of their own country. The whole earth lies before them where to choose and they are rapidly finding it out.

—Steel sidewalks as well as pavilions are now being constructed at one of our Summer resorts. Pavements of this material have been used with success, and steel ties have been substituted for wooden ones in railroad construction. A Western street car company has made a contract for such material, and the steel tie trade is likely to become important in this country, and no doubt in foreign countries as well.

Americanized England.

WHILE the constant cry goes up that there exists in America a decided tendency to copy England in many things, it is curious to note that in a number of ways there is a strong disposition in England to imitate America.

First and foremost is the frequently expressed desire among lawyers to break down the barrier between solicitors and barristers and make them one, as is the case in the United States. It will, no doubt, take considerable time before this can be accomplished. Englishmen move slowly. Every innovation is regarded with suspicion, if not downright fear. Even so-called radicals become conservatives when any alteration is proposed which in the least interferes with individual rights vested in themselves. For instance, solicitors would not care to divest themselves of the exclusive privileges which have been theirs for centuries, in the drawing and serving of papers and the preparation of briefs. Nor would barristers like to see solicitors arguing cases in court. The great difficulty would be in the amalgamation of the men, so long known to each other in separate callings. It would not so much signify with the new set who came into the one profession. It is the oldsters who would kick. Still, I believe the amalgamation will take place some day.

IMITATING OUR RAILROADS.

Another example of British adoption of American ideas will be found in the patterns of the railway locomotives of the present day, the adoption of “bogies” wheel trucks, the outside piston rods and the cabs. I myself am old enough to remember when there was positively no protection for the driver and stoker. Then a sort of shield with two eyeholes was graciously conceded. And now—well, is there any appreciable difference between the English and American railway cab? Then there is the headlight. It is in its infancy in England, it is true, but a beginning has been made. Look, too, at the success of the Pullman cars run on the different lines. I do not despair of seeing the American checking and transfer systems in full force on all English lines. One of the chief objections is the throwing out of employment of so many railway porters. But that argument has not kept steam laundries from inundating the country. The poor washerwomen seem to get on, notwithstanding. And so, I suppose, would the porters.

Again, look at the steam plows that are used—hardly necessary, perhaps, in the small fields of England. Still, there they are, growl as the plowman may. And so with the steam harrows, threshers and everything else that tie belt of the traction engine can reach. Steam laundries were, of course, a direct importation from the United States. All of the idea, at any rate, comes from there, if not all of the machinery. American buggies have long been a fashionable vehicle for extra smart and knowingly up-to-date swells. The samples in many cases would tax the powers of recognition of an American himself, but the intent has been genuinely sincere.

A GOOD AMERICAN SMOKE.

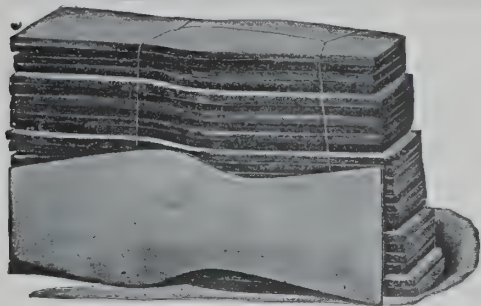
Only the other day I heard a man praising up the smoking virtues of corn-cob pipes and wishing he could get them in England. I happened to have one which a friend had sent me and I offered it to him. I might have given him the prize ticket in a \$100,000 lottery, he was so beaming with joy. “Thanks, most awfully, my dear fellow,” said he, “do you think you could get some more sent over?” I promised him I would see. Now and then another friend sends me a packet of American cigarette tobacco, alternating it with cigarettes of the same. There is a run on both when they come. Every one says: “What delicious ‘baccy!’ What awfully good cigarettes!” and wants to know where I get them. Oddly enough, you cannot get good American cigarettes anywhere that I have been able to discover. I believe they would make a big boom, for there is certainly a delicacy of flavor in them that is unique. These, however, are only small matters, though they go to show a growing taste for things American. It would be quite superfluous, of course, for me to mention as a tendency to imitate Americans the habit which Englishmen of high state have got into of marrying American girls. We all know about that. Also the fondness of these same Englishmen for the American dollars of these same American girls' papas.

NO MORE BABY OFFICERS.

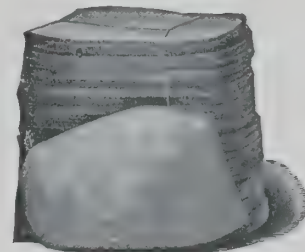
But, perhaps, the strongest instance of all this inclination on the part of England to copy the United States, and certainly the most recent, is the proposed establishment of a naval school on shore instead of on the old hulk Britannia at Dartmouth. This move has been long in mind, but has only just been acted upon in Mr. Goschen's speech on the naval estimates. So England has decided at last to imitate the United States Naval Academy at Annapolis.—*San Francisco Argonaut.*

—The W. F. & John Barnes Company, of Rockford, Ill., U. S. A., manufacturers of Barnes patent foot, hand and steam power iron and woodworking machinery, and manufacturers and dealers in mechanics' tools and supplies, have lately built a 100-foot four-story addition to their factory. They have also issued a new catalogue, which illustrates and describes their goods in a most creditable manner.

—The De Laval Separator Co., 74 Cortlandt street, New York, are mailing the trade two neat catalogues of its “cream separators.” One treats on the “baby,” or hand-power separator, and the other on “power” separators. Among 25 good reasons which it gives for considering its separators the best, it says: “The unqualified superiority of the ‘Alpha’ De Laval to all other separators, in thoroughness of separation, capacity, power, ‘churnability’ of cream, and in other essential respects, is the universal basis of its sale, and subject to the demonstration hereof in actual test, or otherwise.”



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FROM THE U. S. GOVERNMENT.

{ DEPARTMENT OF THE INTERIOR,
WASHINGTON, Nov. 23, 1895.

DENSMORE TYPEWRITER CO.

Gentlemen—We have now in use in the Bureaus of this Department nearly eighty Densmore machines. We have no complaint from the users of them, hence we conclude they are giving entire satisfaction. Respectfully,

(Signed) HIRAM BUCKINGHAM, Custodian.

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Active, responsible **DEALERS DESIRED** in all open foreign cities.

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The Monitor Coffee Separator and Grader

Will make clean separations and grade in one operation.

The Monitor Coffee Milling Machine,

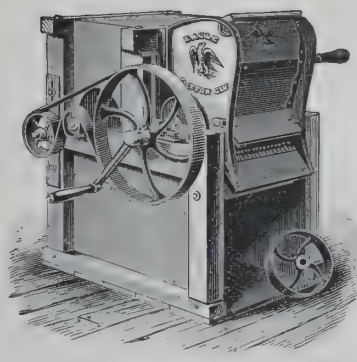
The most perfect miller for coffee ever offered. It will do the finest work on tender as well as hard coffees, and do it without waste or breakage.

These Machines are in successful operation in many of the largest Coffee Houses in this country, and are well worthy of investigation by Handlers of Coffees.

Can be bought direct from manufacturers or through any reliable exporter.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

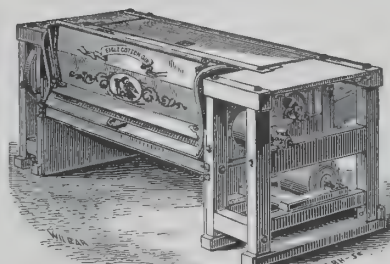
EAGLE COTTON GINS.



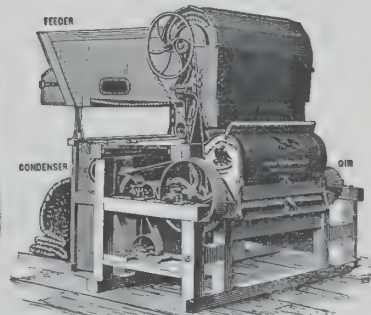
These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

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Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

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On receipt of \$10 we will send a sample line at export prices.



have holders made of best quality vulcanized rubber, are elegantly finished and are fitted with best make of Gold Pens.

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Our goods can be ordered through any commission house.

Catalogue "D" sent on request.

PREMIER PEN CO., 534 Walnut St., Philadelphia, Pa., U. S. A.



SAFETY KETTLE BOTTOM.

Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

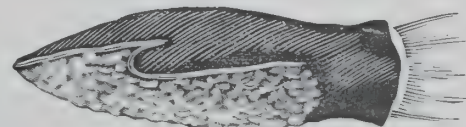
Stove Polishing Mitten,

FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands.

\$18.00 per gross F. O. B. at New York.

For Particulars address **DIAMOND HARDWARE CO., 620 Atlantic Ave., Boston, Mass., U. S. A.**



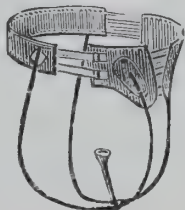
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American Saddles.

ALL over North America for many years Cheyenne saddles have been famous, and every equestrian outside of the United States cavalry and of Canada, has either had his horse tricked out with Cheyenne leather, or has wished he had, says the *Denver Field and Farmer*. The fancy work on saddles, holsters and stirrup hoods that once made Mexican saddlery famous and expensive long ago, was copied by the Cheyenne makers, who kept up the fame and beauty of American horse trappings, but made them so cheap as to be within the means of most horsemen. In the old days when Western cattle ranged all over the plains and the cowboy was in his glory, that queer citizen would rather have a Cheyenne saddle than a best girl. In fact, to be without a Cheyenne saddle and a first-class revolver was to be not better than the sheep herders of that era.

When the writer was in Cheyenne the other day the first places he looked for were the saddle makers' shops. He was surprised to find only one showy, first-class store of the kind, and instead of their being a crowd in front of it there was no sign of more business than was going on at the druggist's near by or the stationer's over the way. The goods displayed in the windows were beautiful and extraordinary. There were the glorious, heavy, hand-stamped saddles; there were the huge, cumbersome tapaderos; there were the lariats or ropes; the magnificent bits that looked like Moorish art outdone, and there were mule skinners and the fanciful spurs, and, in short, the windows formed a museum of things that a cowboy would have pawned his soul to own. The metal work was all such as a cavalryman once declared it, "the most elegant horse jewelry in creation."

Englishmen and Germans now buy the fanciest and best trappings to send abroad to their homes. Hand-stamped saddles cost from \$13 to \$85, but \$35 buys as good a one as a modest man who knows a good thing will care to use.

Our Inventive Genius.

THE report of the Commissioner of Patents for the calendar year 1895 contains some statistics of more than ordinary interest. For thirty-five years the Patent Office has been on a paying basis, the balance to its credit now standing at \$41,529,881. At least nine-tenths of the 21,998 patents granted were to citizens of the United States. Connecticut takes the lead in the number of patents in proportion to population. The North leads in inventive activity, and the States which stand lowest in the list are all in the South. Thomas A. Edison now has to his credit 711 patents. Next to him stands Elihu Thomson with 394.

While it is probable that not half the patents granted ever will prove of benefit either to their owners or to the people, among the list will be found valuable devices enough to maintain the American reputation for practical ingenuity. In the last quarter of a century inventors have done great things for the comfort and convenience of humanity. The half which has been accomplished was not even dreamed of a century or two ago. The many achievements have roused great expectations for the future, and without doubt they will be realized.

It is a peculiarity of men with inventive genius that the failures and disappointments of others rarely have a discouraging effect. Although the records show that only a small minority of inventors ever receive more than the most meagre financial reward for their skill, new devices are sought with steady earnestness and enthusiasm. Love of invention, not the desire for gain, appears to be the ruling passion, and often fortunes are expended in perfecting devices which stand only the remotest chance for yielding adequate returns either in money or fame. Inventive genius is closely akin to mania, and no amount of disappointment and no number of obstacles appear able to diminish its activity. This may be bad for the individual, but it is a good thing for the people in general, since it is only through persistence that progress is made.—*Philadelphia Record*.

THE President of Venezuela recently purchased from one of our advertisers two bicycles for use in his family. There is a growing demand for American wheels in South America, and on each outgoing steamer nowadays may be found wheels of different makes, generally the finest.

—We invite the attention of foreign importers of, and dealers in, surgical instruments, supplies and kindred goods to the advertisement of the Hastings & McIntosh Truss Company on another page. This company make a specialty of hard rubber trusses which are said to be of very superior quality.

—American made shoe machinery has received a new impetus abroad by means of the Shoe and Leather Fair recently held in London. Not only did shoemaking mechanism from the United States derive much effective advertising, but it furnished what was perhaps the most interesting feature of the exhibition.

—Cigarettes are advertised to some purpose, the total number made in a year in the United States being 3,620,000,000. The number of consumers is estimated at 18,000,000. New York alone makes 1,800,000,000 cigarettes a year and Virginia 825,000,000. To supply the yearly demand 6,000,000 pounds of tobacco are required.

—There is a market in Manchuria, China, for American wares. Now that the Japanese have evacuated the peninsular and the Chinese have resumed possession, there will be some demand for cannons, small arms, ammunition, smokeless powder and other military stores to replace those carried away by the Japanese. There is also an opening for grinding, spinning, mining and other machinery.—*United States Vice-Consul at New-chwang*.

Ours Is a Business Nation.

ARE we a business nation? Some nations are characterized as military, others as industrial, and so on to the end of the catalogue. Some nations are conspicuous for their manufacturing interests, others for their mining operations, still others for their commercial enterprise. In the United States, with our broad expanse of territory and our wonderful natural resources, we have almost every interest and industry represented. In the New England States, together with New York, Pennsylvania and a portion of the central belt immediately west of them, our manufactures are specially developed. In the same territory, in part, and in some that is further south, as well as in much that is west, our mining interests are very prominent. In the southeastern portion of the country planting is conspicuous, while in the west and southwest grazing and herding come up for attention. And so we might particularize with reference to other industries and with respect to various portions of the Union. Hand in hand with all these industries goes a very large distributing trade. Our railroads derive their support therefrom. Thousands of retail merchants find profitable trade, while various handicrafts flourish as auxiliaries. When we look the country over from one end to the other, taking all these interests and employments into consideration, we find but one term which describes it, and that is, that we are a business nation. There is no class among our people that is not engaged directly or indirectly in business. With 12,000,000 voters, we have 9,000,000 depositors in banks, and out of 12,000,000 voters over 1,000,000 are so engaged in business as to have credit ratings in the commercial directories. When it is recalled how widespread is the suffrage in this country and how few there are who are not voters, this statement reveals a wonderful business activity, and warrants the assertion that, as a fact, we are a business nation.—*Business*.

A Trolley in Midair.

CINCINNATI is preparing to engage in the erection of an engineering and mechanical novelty. Immense cables are to be strung across the Ohio River, connecting Cincinnati with Ludlow, Ky., upon which a transport car will be hung and moved back and forth by means of overhead pulleys. While a similar device has long been in use for carrying dirt, stone and material on the Chicago Canal, it has never been used in passenger traffic. Two steel towers, each 152 feet high and 50 feet square at the base, are to be erected, one on each side of the river, 1,760 feet distant from each other. The towers are to be connected with four patent steel carrying cables of 50 tons, tensile strength. Beneath each tower there is to be a waiting-room, and at the side of each tower will be the landing, to which the car descends.

The hoisting and propelling machinery, weighing 60 tons, will be located in the tower, 60 feet above the ground. The span of the cables will extend 1,760 feet, being 150 feet from the ground at the ends and having a sag at the centre of from 60 to 90 feet, according to the load suspended to them. The car will carry 10 tons, empty, and will carry 50 people. When the car is loaded it will be hoisted vertically from the landing until, by a series of automatic clutches, it is suspended to the pulleys on the four carrying cables. It will then be propelled by a system of tug cables and pulleys across to the opposite tower, travelling at the rate of 1,200 feet a minute. At the opposite end it will be lowered to a landing and the passengers will disembark.

Some idea of the immensity of the undertaking may be gained when it is known that the towers will be higher than any building in Cincinnati and that the whole plan involves an outlay of over \$100,000. It will require 2 miles of 2-inch cable and 8 miles of running cable.

—A carpet company in Worcester, Mass., U. S. A., has received from an Amsterdam (Holland) house a generous order for Burmah rugs. The order in this instance is one of the first on record for the exportation of American-made rugs and carpets to Europe.

—It is reported that The Whitman Agricultural Company, of St. Louis, Mo., U. S. A., lately received a large order for hay presses from a foreign country to which the firm never before shipped any goods, although it makes shipments to nearly every civilized country in the world.

—Glass coffins are soon to be manufactured by a plate glass company in Kokomo, Ind., U. S. A., for two men who have invented and patented such an article and formed a company to introduce it. The bottom and sides of the coffin are to be made of rough, unground and unpolished glass, but the top is to be of highly polished plates of glass. The inventors think there are several good points in the coffin and lots of money, too.

—The Armour Packing Company will soon have in active order the largest single-acting ice machine in the United States. It will weigh 300,000 pounds; the foundations on which it will rest will contain 15,000 cubic feet of masonry. The tanks will hold 2,200 galvanized iron ice cases, and the 1½-inch pipes, if extended, would reach 13 miles across the country. The daily capacity is 350 tons of ice. When completed the Armours can turn out daily the small amount of 1,900 tons of frozen water.

—A syndicate of Pennsylvania coal operators has made a successful experiment in shipping anthracite coal to Germany, and a larger movement in this direction is looked for in the near future. Pennsylvania operators have for some time been making endeavors to enter the German market, but have so far met with the usual indisposition of the people of that country to make changes in their methods. It is thought now, however, that there is a practicable opening for a large supply of anthracite coal to be marketed in Germany and other European countries.

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HOLYOKE,
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Pumps for Every Service.

Water Works Engines.

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TANK SERVICE
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FIRE PURPOSES,
SUGAR HOUSE PUMPS.

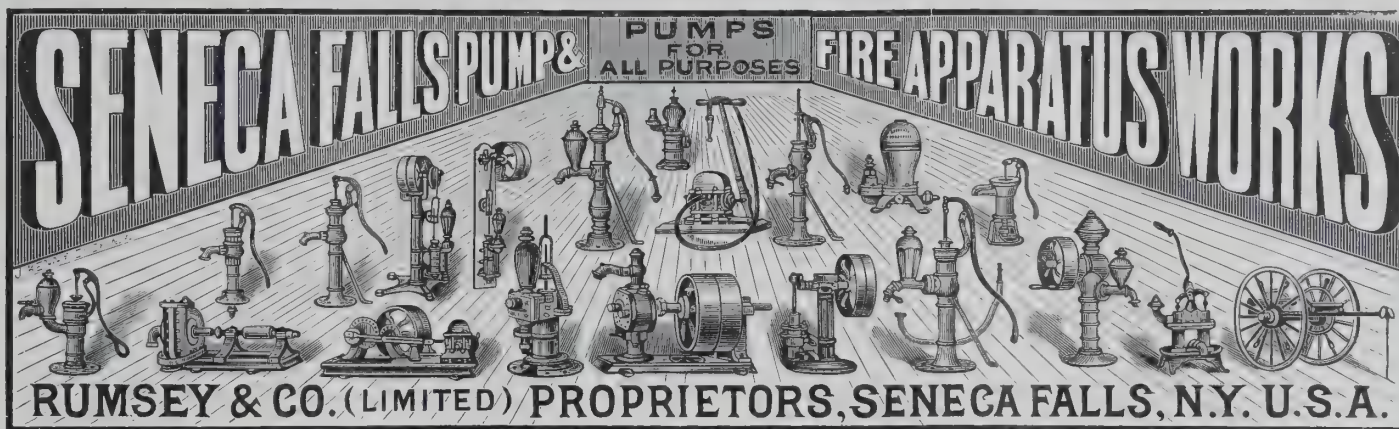


Double Plunger Mine Pump.

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EXPORT OFFICE: 35 DEY STREET, NEW YORK CITY.

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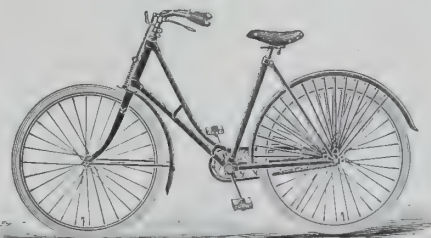
None but expert mechanics employed in their construction.

Absolutely high grade in every detail.

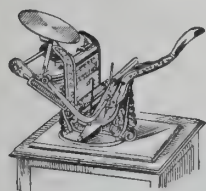
Best wheels ever offered at anything like the price.

Write for catalogue and full information as to terms, etc.

BUFFALO CYCLE CO., Buffalo, N. Y., U. S. A.



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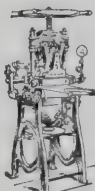


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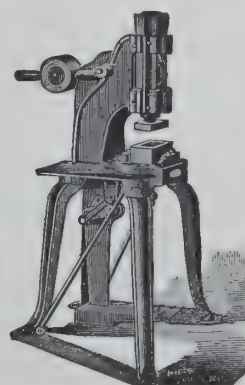
Swing Foot Lever Soap Presses, Nos. 1 and 2. Combination Foot and Steam Power Soap Presses. Improved Soap Remelting Catchers, either with or without 8 Horse Power Engine attached. Seamless Steam Jacketed Kettles. Steamed Jacketed Toilet Soap Kettle, with Agitator (three different styles). Steam Jacketed Rendering and Refining Kettles.

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Our Unprecedented Export Trade.

THE official data of the Bureau of Statistics of our Government show that during March last the value of our manufactured exports reached the unprecedented total of \$19,125,785, or 25.85 per cent. of the gross exports. The phenomenal increase of manufactured exports began in 1895, and during last year they exceeded \$200,000,000. In March the flood of such exports was at the rate of \$229,500,000 per annum.

The striking increase which began in 1895 has not been spasmodic, but has been steadily augmented. The Bureau of Statistics now reports that for the 9 months ending with March last the manufactured exports amounted to \$163,187,926, and were 24.57 per cent. of our gross exports.

The great significance of these figures can best be seen by noting that in no year before 1895 had the exports of our manufactures reached a total of \$184,000,000. In the fiscal year 1891 the exports of domestic manufactures were only \$168,927,315, or 19.37 per cent. of all exports of merchandise; in 1892 they were only \$158,510,937, or 15.61 per cent., and in 1893 \$183,718,484, or 21.24 per cent.

The present marked increase in exports of the products of American labor speaks much encouragement for our mills and factories, and is an earnest of new and still larger conquests of foreign markets by our domestic fabrics.

American and English Labor.

THE *Iron and Coal Trades Review* recites an interesting experience showing the superiority, in some respects, of American labor over English, says the *Carriage Journal*. In Chicago is a factory for making wagon frames; there is another in Leeds, England. The two establishments are controlled by the same management. The one in Chicago pays just about double the wages paid in Leeds; nevertheless, such is the energy and vigor which the men in Chicago throw into their work, and such the facilities which they give for turning out work rapidly, that the products of manufacture are—or at any rate can be—sold more cheaply in Chicago than in the heart of the most industrial community in England. The distinguished inventor, Hiram S. Maxim, has no high opinion of the expertness of the English mechanics. A little while ago an act of Parliament was passed, the "Merchandise Marks Act," requiring all foreign made goods to be labelled or stamped as of foreign manufacture. The purpose of the act was to help home industry. But, according to Mr. Maxim, it has had a boomerang effect. People can compare the foreign manufactures with the home products, and the comparison is not flattering to the British manufacturer. In short, Mr. Maxim maintains that a great many articles made in Germany are equal, if not superior, to those made in England. In particular, he says that "if a mechanic wants a square that is square, he has no choice in the matter, but must of necessity buy one that is made in the United States, because there are no squares that are square made for sale in England."

New Marine Invention.

THE eophone, an invention of Mr. F. De La Torre, of Baltimore, Md., to improve navigation, has been successfully tested by the Baltimore Steam Packet Company, which operates the Bay Line, running on Chesapeake Bay between that city and Norfolk, Va. The first vessel to be equipped is the Alabama, which was recently built for the Bay Line and which is one of the finest passenger vessels flying the American flag. By means of the eophone one can distinguish sounds at a distance of 15 and 20 miles and readily "pick up" buoys, or other channel marks, at night or during thick weather. It is especially useful in locating passing steamers by their whistles.

United States Automatic Gun.

AN automatic machine gun has recently been adopted by the Government, which, after being set in motion, will fire 400 shots or more a minute so long as the cartridges hold out. All a soldier or sailor has to do is to fire one shot. Then he can tie back the trigger and go to dinner if he wants to, and the gun will keep firing away. The gun in its recent tests at Indian Head, near Annapolis, was fired for a trial of its accuracy at a 200-yard range. It made 100 consecutive hits in 16 seconds. In the test of durability the gun was fired 8,000 times, and showed no signs of weakness or wear afterward.—*New York Press*

—Paper mills to utilize the palmetto plant are to be established at Waycross, Ga., U. S. A., where the plant grows in profusion.

—In 1883 the production of aluminum in the United States did not exceed 83 pounds for the year. This year it is estimated that not less than 6,000 pounds per day will be produced.

—The Hart Manufacturing Company, of Cleveland, complain of their inability to keep up with orders, a complaint that we regret is not more general. Their export trade has made marvellous strides, recent orders having been received from such out-of-the-way places as Syria and South Africa.

—The value of the invention of a machine for making oval cigarettes by Bernhard Baron, of New York, under which it is understood the National Cigarette & Tobacco Company will operate in the manufacture of oval cigarettes, can be understood from the fact that heretofore oval cigarettes have been made by hand at the rate of 600 a day, whereas the improved patented mechanism will make the machine-made oval cigarette at the rate of between 400,000 and 500,000 per day.—*Exchange*.

Give England the Glory.

"AMERICA now makes the best bicycles in the world, and yet the bicycle is an English production," Joseph McKee said recently. "The old high ordinary, the now forgotten Facile and the present world-subduing chain machine are English. The diamond frame is English, and so was the 'hayfork' frame which preceded it. The weldless steel tubing is English. The ball pedal was first made in England. The tangential spoke is English. The pneumatic tire originated in Ireland. This country has aided immensely in perfecting small details, but she has made just one important contribution, and that is the wood rim."

"The truth of history compels this acknowledgment, and yet we may take comfort in the great value of this one contribution. It takes two pounds weight off the wheels; it supplies elasticity in the precise place where needed and increases strength in so doing. If effective application of driving power were the sole need we should strip off the tires and make the whole structure as rigid as a bar of railway steel, but some elasticity is imperative. It must not be in the frame—a springy frame would be destructive—but it can be in the wheels. The wheel must be tense and rigid in the direction of its rotation or driving power is wasted, but the wheel can have elasticity in the direction of its own diameter. The tire furnished that, but there was not enough of it, so the wood rim came in."

"It is lighter than the steel rim, and it permits the frame also to be made lighter. Wood springs back and rights itself from strain, while the steel stays sprung and 'buckled.' The wood does not rust and dent, and cementing the tire is easier on it. My firm made this sole American contribution to the bicycle. Of course we were making the high bicycle then and had tried a wood rim experimentally on one as long ago as 1883. We put the first wood rims on sale in 1892, and there was great laughter in the trade. Dismal failure was predicted. The spoke holes would weaken the rims; the pull of the spokes would split them; they would soak up water and would then warp and crack and rot. These predictions proved false. The rims steadily gained in popularity, and in 1894 nobody laughed at the absurdity of a wood rim on a bicycle. By 1895 nothing else was heard of."

This is how and by whom the wood rim was originated. It is a true bit of bicycle history.—*New York Times*.

MR. GEO. WOODFORD, a Philadelphia manufacturer, says: "Before using the Hercules Oil Injector there was a solid crust as hard as iron on inside of his steam boilers, which after a few months crumbled away leaving the boilers as clean as when they were new."

ONE of the newest applications of electricity to metal working is what is called an "electric torch," invented by Charles L. Cohen, of Detroit. It consists of arrangements whereby an electric arc is formed at the end of a small hand tool, so that the arc may be conveniently directed to the point to be locally heated. With this apparatus all forms of light soldering and welding work can be done rapidly, effectively and economically. One of these electric torches enables a man to do better what it ordinarily requires several men to do, as, for instance, in bicycle and carriage tire work.

THE last of the three great electric locomotives for the operation of all trains on the main line of the Baltimore & Ohio Railway has been delivered by the General Electric Co. These locomotives will handle the entire freight and passenger traffic of the B. & O. road passing in and out of Baltimore from the North, through the Belt Line tunnel which passes under the city and which is the longest soft earth tunnel in the world. Each weighs 96 tons, and while almost equal in size to the largest steam locomotives, greatly exceed them in power—that of each equalling nearly 1,500 horse-power. The first was put into service in August last and the second in December, since which date they have been handling the entire freight traffic of the B. & O. through the tunnel without accident of any kind. No limit of speed has yet been reached with these engines. Eighty miles an hour has been attained without an effort, and they could as easily make one hundred and fifty miles an hour as the steam engine makes sixty miles.

—Bleaching by electricity is now an established industry.

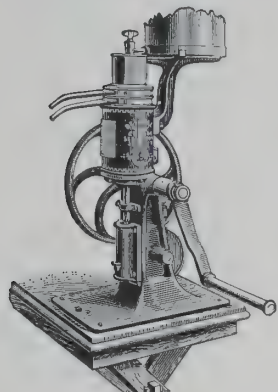
—Rubber trees are reported found growing in Manatee County, Fla., U. S. A.

—A remarkable feat in moving was successfully accomplished in Chicago recently, when a large stone church, with a massive square tower, was jacked up from its foundation and moved a distance of 50 feet to another lot.

—A typewriter has been invented by A. A. Verdian, of Glendale, Ohio, U. S. A., which counts the number of words in a line as it writes them, the pointer returning to zero on the dial at the end of every line, ready to count the next line. It is especially designed for the service of those writing by the word or line, as when the work is done it is also counted.

—Horseless mail wagons, we are informed, are soon to be used in all the large cities of the United States. The report is that the Post Office Department has for several months been considering the project and that they have completed plans for a model carriage which is now in course of construction. This new wagon is to be 12 feet long, 6 feet wide and 6 feet high, and will in every respect be a small post office on wheels. These wagons are to be employed in both city and country districts where there are no railway lines and where the service can be improved by assorting the mails between the offices while in transit.

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85,000 machines in use in every country in the world.

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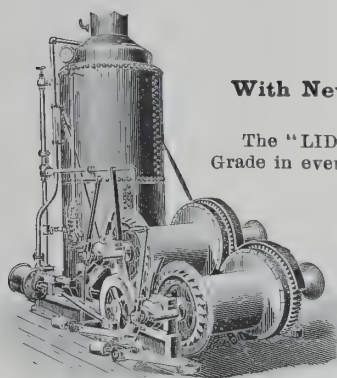
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THE BAXTER REGISTER

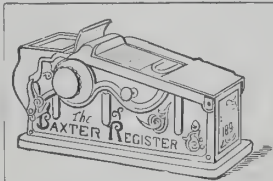
At one writing makes 3 bills (5x4 3/4 inches), two coming out of machine while triplicate is retained inside under lock and key. Thousands in use in every line of trade. In retail business top bill with firm's name printed on can go to customer, second to cashier, third copy retained inside for proprietor's use.

Protects cash and charge sales.

Gives proprietor a record of every transaction.

Used to an advantage in factories for duplicating orders, etc.

Send for illustrated circular.



Made of metal, nickel finish.

Dimensions: 5 1/4 in. wide, 14 in. long, 7 3/4 in. high.

EXPORT PRICE, \$20.

for Register and supplies for 6,000 sales, printed with any heading and language desired.

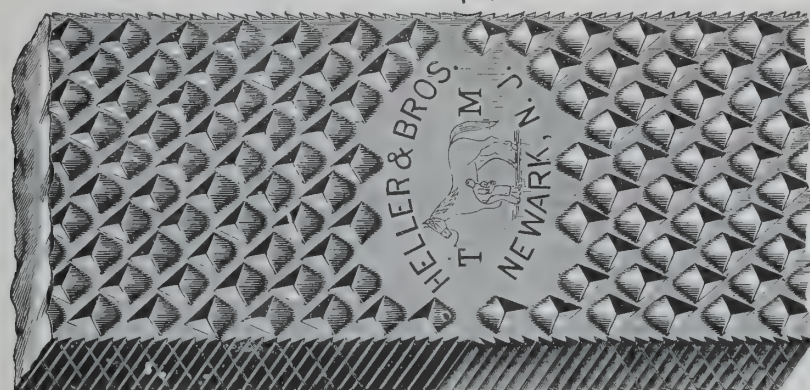
Packed securely in box weighing 50 lbs. F. O. B. Chicago.

THE BAXTER REGISTER COMPANY

CHICAGO, ILLS., U. S. A.

HELLER & BROTHERS, Established 1836. Newark, N. J., U. S. A.

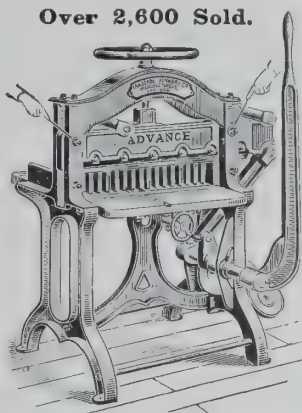
Manufacturers of the Celebrated American Horse Rasps, Files and Farriers' Tools.



CENTRE SECTION 16-INCH HORSE RASP.

We guarantee our goods superior to any in the market, and all we ask of them is a trial to vindicate our claim, as we feel assured that where used they will give a good account of themselves. Our '96 Catalogue on application.

Over 2,600 Sold.



ADVANCE

LEVER PAPER CUTTER.

Built entirely of iron and steel. No soft metal in bearings. No gears, springs or cams or complicated parts to get out of order. They have Gibs and Setscrews in the Side Frames to take up wear, and will last a lifetime.

GREATEST CUTTING CAPACITY FOR LEAST MONEY. —REDUCED PRICES.—

22 1/2-inch.....\$73.50 | 30-inch.....\$120.00
25-inch.....84.00 | 33-inch.....136.00

Prices NET F. O. B. cars New York City.

Order of any leading commission house; send duplicate order to us. Write for Complete Illustrated Circular.

THE CHALLENGE MACHINERY CO.

Sole Manufacturers,

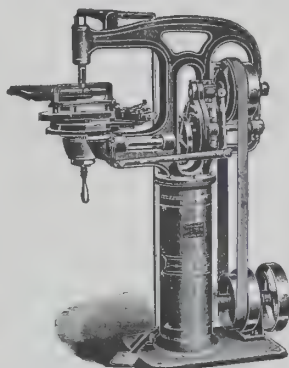
CHICAGO, ILL., U. S. A.

FLAGG MANUFACTURING COMPANY,

MANUFACTURERS OF



Union Twin Edge Setter,
Union Rapid
Sole Rounder,
Rapid Cutter Grinder,
Union Cementer,
Wood and Iron Patterns
for Sole Rounder,
Etc., Etc.



SEND FOR CATALOGUE "S."

Union Rapid Sole Rounder.
(Uses Wood Patterns.)

Union Twin Edge Setter.

BOSTON, MASS., U. S. A.

THE SIMMONS

SIMMONS MFG. CO. GOLD MEDALS AND HIGHEST AWARDS. A NEW LOREANS 1885 4 GM OBLA DLS 1887 1889. SAN FRANCISCO CAL. STAMPAUS 1893. CHICAGO 1893. AWARDS. WE MAKE SOLID TOOTH AND INSERT POINT.

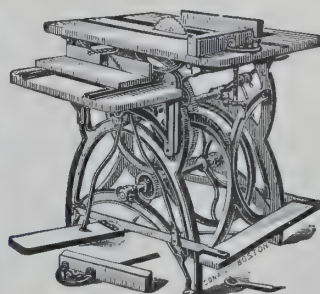
CIRCULAR SAWS. DRAG SAWS. BAND SAWS. ONE EIGHTH TO ONE ELEVEN INCHES IN ALL KINDS. OF SCROLL SAWS WE ARE THE LARGEST MANUFACTURERS OF MACHINE KNIVES IN THE WORLD.

AND KNIVES

WE MAKE EVERYTHING IN THE SHAPE OF KNIVES. OUR ADDRESSES ARE SIMMONS MFG. CO. 210 COLUMBIA ST. BOSTON, MASS. U. S. A. SIMMONS SAW CO. PORTLAND, OREGON. SELLING AGENCIES L. A. KIMBALL 107 LIBERTY ST. NEW YORK CITY. SIMMONS MFG. CO. LTD. 23 MAGAZINE ST. NEW ORLEANS, LA.

MARSTON'S FOOT AND HAND POWER SAW

FOR RIPPING, CUTTING OFF, GROOVING, RABBETING, CUTTING TENONS, MITERING OR BORING.



Weights 300 pounds. Gauges slide in planed iron grooves in top. Gears are all machine cut. Shaft and arbor are made of steel.

Price, - \$60.00.

With boring table and side treadle, \$67.00.

JOHN M. MARSTON & CO., Boston, Mass., U. S. A.

American Sulphur Abroad.

AN encouraging report on the prospects for the development of the American sulphur business abroad has been made by Consul Bruhl, who reports the sulphur industry of Sicily to be in a deplorable condition, and says:

"But to make matters worse, another dark cloud has arisen above the Sicilian horizon—the late report of a recently developed rich sulphur mine in the United States. A few days ago a Catania sulphur mine owner and refiner called at this consulate and handed me a clipping from a New York paper giving a description of a newly opened sulphur mine near Lake Charles, in Calcasieu Parish, La., of which Mr. Rockefeller, Robert P. Porter, F. B. Squire and others are said to be owners and operators. Several other Sicilian firms have also received this information, and, although it has been known that undeveloped deposits of sulphur exist in several parts of the United States, the report referred to stating that the deposits in that locality are inexhaustible and the quality superior to that of the Sicilian product, and, owing to its close proximity to both railroad and seaboard, as well as on account of the employment of the most modern machinery and backed by a syndicate of unlimited capital, they would not only make America independent of the Sicilian product, but in all probability drive the Sicilian product out of the European market, has caused quite an uneasiness among those interested in the Sicilian sulphur industry."

The Production of Copper.

HOW rapidly the copper trade of the world has grown is indicated by the statistics of the world's production collected annually by Henry R. Merton & Co., of London. According to their compilation, the production has been as follows for the last six years:

PRODUCTION OF COPPER—GROSS TONS.

Year.	World.	U. S.	Spain.	Chili.
1885.....	225,592	74,050	47,873	38,500
1890.....	269,455	116,325	51,700	26,120
1891.....	279,391	128,179	53,915	19,875
1892.....	310,472	152,620	56,462	22,565
1893.....	303,530	147,210	53,995	21,350
1894.....	324,505	159,965	54,175	21,340
1895.....	334,105	172,300	54,950	22,075

In 10 years, therefore, the world's production has grown by 108,000 tons, and out of that increase the United States takes credit for 98,000 tons. To our enormous total we are now adding at the rate of 50,000 tons this year. There has never been any such jump in the production of the metal, and it will need a very good consumption to take care of it if continued for any length of time.

United States Manufactures in Canada.

THE *Iron Age* for April 30 prints the following report from its Canadian correspondent: "Where a few years ago the whole sweep of the walls and of the sample cases (in hardware stores) was one great exhibit of British wares, to-day we find three-fourths of the space given up to American samples. The innumerable articles which make up the list of builders' hardware (leaving out nails), the manifold things of hardware stock that enter into household economy, sundries of every imaginable kind—these come from the United States. American (commercial) travellers were never so numerous as they now are, and the volume of American sales was never so large.

"A noteworthy feature of the trade is the almost total displacement of English galvanized iron by American.

"Of sheep shears, which are just now selling freely, it is to be noted that, whereas the imports were almost exclusively from England, they are now very largely from the United States.

"At Montreal, British, American and Canadian (pig) irons now all meet together. A year ago the British brands appeared to have succumbed to the Ferrona, Londonderry and New Glasgow irons of Nova Scotia, while Southern irons had not yet penetrated to Montreal. But now all three are pressing on that market. Leaving Montreal and going west, we find the trade almost wholly divided between Southern and Canadian makes, in proportions that are supposed to be not far from equal, though still probably somewhat in favor of the United States brands."

Farm Implements.

A CORRESPONDENT of a Danish paper compares the American with Swedish agricultural implements, and he ventures to assert that the ingenious contrivances of the Yankee are absolutely the best in every particular, whether they be for horse or hand power. While the American make is costlier at the start than the home pattern of the same machine, he claims that in the end it is far the cheaper on account of its superiority. Furthermore he advises the adoption of the genuine article as counterfeits are very frequently found upon the market.

—The Union Iron Works, of San Francisco, Cal., U. S. A., recently shipped nine steel barges to Russia to be used for the navigation of Siberian rivers in connection with the construction of the Trans Siberian Railway.

—The Pacific States, not content with developing a rapidly growing trade with Japan, are now gathering in shekels from South America. The flour mills of Spokane are sending large amounts of their products to Guatemala and Chile. The flour is packed in 100 pound sacks, which are admitted free of duty. The trade is increasing rapidly.

American-British Trade.

ACCORDING to a report of the United States Secretary of the Treasury as to the gross amounts of our exports to and imports from Great Britain and her colonies during the last five years, we find that American exports to the United Kingdom are more than 150 per cent. greater than the imports therefrom; to Bermuda, 60 per cent. greater; to British Honduras, 130 per cent.; to Canada, about 33½ per cent.; to Newfoundland and Labrador more than 250 per cent.; to British India and East Indies, 33½ per cent.; to Hong Kong, almost 500 per cent.; to British Australia, more than 60 per cent. From British West Indies American imports are 60 per cent. greater than the exports to them; from British Guiana, 115 per cent. greater, and from scattered British dependencies, 233 per cent. greater.

The total amount of American imports from Britain and her colonies for the last five years is \$1,300,078,768, as compared with \$2,819,092,944 of American exports to them in the same period, a balance in favor of the United States of \$1,519,014,176. As a rule, the nearer British dependencies are to the United States the higher is the relative proportion of the imports from them to the exports to them.

Bicycles in Greece.

GREECE has the bicycle fever. There are now 400 wheels in Athens. The fad which has grown from year to year in America and in England, and which of late has become somewhat of a rage in France, is now finding its way into all parts of the world.

It is only a few years since the bicycle and its rider were regarded in Athens somewhat in the light in which they were regarded in China when first seen in the interior of the kingdom—as a devil on a fly wheel. Now clubs are formed day by day for the cultivation of the bicycle, and the dread which even yet exists among the rural districts must soon disappear. The Crown Prince, the German, English and American Ministers have all become enthusiastic champions and thus it has become a fashion.

There is here an opportunity for the American wheel, which is acknowledged to be the best on the market; and in the development of the "craze" there is also an opportunity for the display of American skill at the Olympian games of the future. Some of our "scorchers" can give the participants in contests to come an exhibition of speed and muscle undreamed of by the most ardent admirer of the prowess displayed by the stalwart athletes of bygone days.—*Republic*.

Improvement in Terra Cotta.

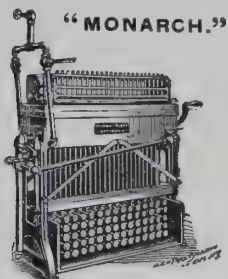
MR. HARRY GRIFFIN, of Terra Cotta, Ill., U. S. A., has succeeded after much time and experiment in producing enamelled brick and terra cotta at one burning, and in producing, in the finish, perfect facsimiles of the finest marble and onyx. One great difficulty in the manufacture of terra cotta, outside of the enamelling, has heretofore been in preserving the sharpness of impression given by the mold, and, above all, to avoid the uneven shrinkage and warping which is so liable to take place when it is being fired in large pieces, such as are used for cornices, lintels, etc. Any want of truth in the lines of a long cornice becomes painfully apparent, and each molded block of a door or window jamb must fit accurately in the next one in order to preserve the true architectural beauty of the design. Mr. Griffin is now filling a contract for the cornice and enamelled ornamental material being used in the construction of an immense office building in Chicago.

The Manufacture of Matches.

THE manufacture of matches in the United States is an immense industry. All the necessary materials are at hand and easily obtainable. This can be said of no other country. England depends upon the United States and Canada for wood, while Sweden and Germany must import phosphorus. These are the only countries where the manufacture is carried on to any great extent. In no country but this is the work done entirely by machinery. Two firms in this country have automatic machines, into which blocks of wood 2 inches square and 12 inches long are fed. The machine cuts these sticks into blocks of the proper length, splits the blocks to the proper size, and sticks them into a steel plate filled with holes. This plate is carried by the machine to the dipping tank, where the head is attached. This substance is composed of a mixture of phosphorus, chloride of potassium, ground sand and glue, and is in a semi-liquid state. Into this the machine dips the ends of the stick and throws them out ready for boxing.

—Unbreakable mirrors are now made from celluloid. A perfectly transparent, well-polished celluloid plate receives a quicksilver backing like that of a glass mirror. This backing is protected by another celluloid plate, which also mirrors, so that it furnishes practically a double mirror, lighter, cheaper and more lasting than glass.

—Dr. S. W. McLean, of Washington, Ia., U. S. A., has invented a rifle that is exciting much interest among military men. A single straight movement of the hand loads and fires the weapon, which has a capacity of five cartridges. It is filled by one movement from a case containing the cartridges, and the patented devices make clogging or disarrangement of the cartridges impossible. It is lighter than other rifles, and 750 rounds have been fired at one time to test its endurance.



"MONARCH."



Successors to A. W. HOUSHIN & SCHUBERT & CO.

Manufacturers, Designers
and Builders of**Soap and Candle Machinery.**

Catalogues and Estimates for Complete Plants Free.

39, 41, 43, 45 Fifty-third St.,

- - - BROOKLYN, N. Y., U. S. A.

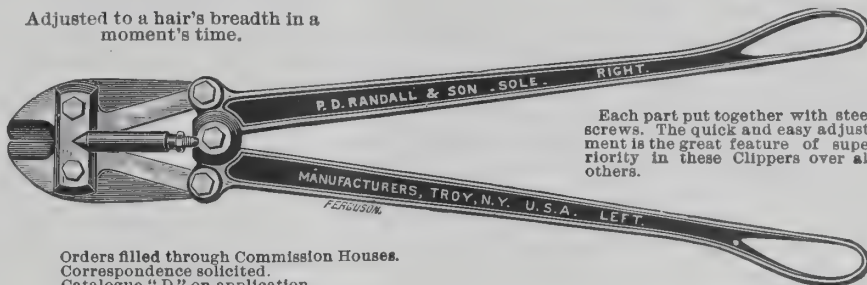
**RANDALL'S
NEW VALVE ADJUSTING BOLT CLIPPERS.**

No weak spots in the whole Clipper. Knives tempered in the most careful manner. Every Clipper thoroughly tested before it leaves our factory. No. 3 cuts $\frac{3}{8}$ inch or less. No. 4, $\frac{1}{2}$ inch or less. No. 5, $\frac{3}{4}$ inch or less.

ADDRESS,

P. D. RANDALL & SON, - Troy, N. Y., U. S. A.

Adjusted to a hair's breadth in a moment's time.



Each part put together with steel screws. The quick and easy adjustment is the great feature of superiority in these Clippers over all others.

Orders filled through Commission Houses.
Correspondence solicited.
Catalogue "D" on application.

SILVER LAKE COMPANY, THE ORIGINAL MANUFACTURERS OF Solid Braided Cordage.

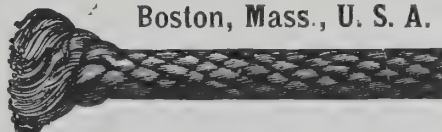
WINDOW SASH CORD, } COTTON, LINEN OR
RAILROAD BELL CORD, } ITALIAN HEMP.

ARC LIGHT AND TROLLEY CORD.

Send for Samples.

STEAM PACKINGS. SILVER LAKE & MILLER SOAPSTONE PACKING.

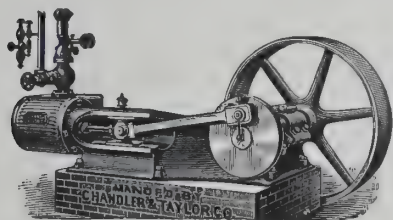
Send for Samples.



Boston, Mass., U. S. A.

THE BEST IS THE CHEAPEST.

CLOTHES LINES,
AWNING AND MASONS' LINES,
CHALK LINES, ETC., ETC.



STRONG.

WELL BUILT.

SERVICEABLE.

STEAM ENGINES.

12 to 100 Horse Power. Suitable for Heavy Continuous Work. Every Engine TESTED under full load.

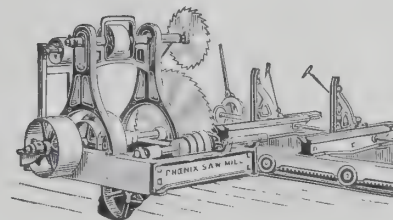
Suitable Portable and Stationary BOILERS

On hand for immediate delivery.

CIRCULAR SAW MILLS for all classes of work and MULAY MILLS for Light Power.

Send for Circular "C."

CHANDLER & TAYLOR CO., Indianapolis, Indiana, U. S. A.

**CROSBY STEAM GAGE AND VALVE COMPANY,**

MANUFACTURERS OF

Standard Steam Appliances.

Awarded the GOLD MEDAL at Paris, 1889.

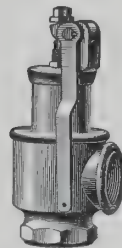
Crosby Pop Safety Valves and Water Relief Valves,

Crosby Improved Steam Gages, Single Bell Chime Whistles,

Crosby Steam Engine Indicators, and many other specialties.

93 & 95 OLIVER STREET, BOSTON, MASS., U. S. A.

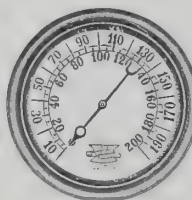
Catalogues sent on application.



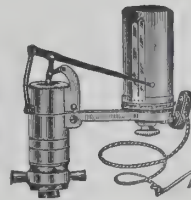
Safety Valve.



Water Relief Valve.



Steam Gage.



Indicator.

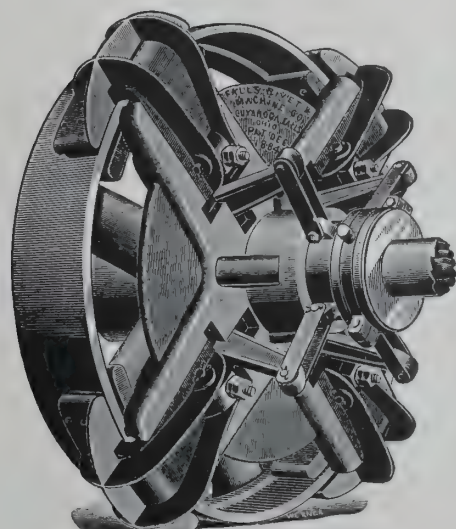


Chime Whistle.

Translating Bureau of "THE AMERICAN EXPORTER"

BENNETT BUILDING, NEW YORK.

Will furnish upon application, estimates for the translation and the printing of books, catalogues, circulars, letters, etc., in Spanish, French and English.



Friction Clutch Cut-off Coupling.

THE FALLS RIVET AND MACHINE COMPANY,

Cuyahoga Falls, Ohio, U. S. A.

MANUFACTURERS OF

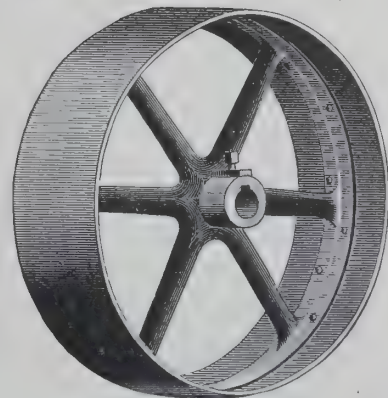
PULLEYS, SHAFTING, COUPLINGS,
PILLOW BLOCKS, FRICTION CLUTCH
PULLEYS, FRICTION CLUTCH
COUPLINGS, Etc.,

ALSO

SEWER PIPE AND CLAY MACHINERY.

Our STEEL RIM PULLEYS are much stronger, better balanced and 30 PER CENT. LIGHTER than cast iron pulleys.

Illustrated Catalogue furnished on application. Correspondence invited.

PATENT
STEEL RIM PULLEY.

Racial Characteristics in Machine Designing.

REFERRING to the peculiarities of machine designing among different nations, Mr. Albert Williams, in the *Engineering Magazine*, notes that, according to the accepted notions of racial characters, the English and Scotch are proverbially conservative, methodical, painstaking and careful to secure durability by using sound material and often an unnecessary surplus of it, making safety a high factor. Their predilection for rigidity, leading to heavy frames and bed-plates, sometimes goes to cumbersome extremes. They have not got over a partiality for hand work where special excellence is desired. Their machines are, as a rule, very reliable. The French are quick, sensitive, innately artistic in all their perceptions, particular as to details and finish, and somewhat given to an inordinate desire for originality of effect leading sometimes to bizarre designs, their products, however "showy," are never absolutely unsightly. Attention is given to the appearance of tools and implements intended for the simplest and most homely purposes. Hand work is preferred to machine work, partly because it is cheap enough to compete with the machine tool, and partly because of the abundant supply of intelligent, skilled artisans in the lower grade. The German designer, always well grounded in mathematics, calculates stresses and proportions minutely, but in the outcome does not shave so closely as the Yankee. He never allows himself to be hurried, and in everything made for the home market is conscientious. In the proportioning of parts with an eye for effect, he produces curved lines and rounded masses, reminding one of the drawing of the old Flemish and German artists. The American regards time and money as of the first importance. Labor is dearer than abroad, and, while there is a large stock of inventive genius, there has been relatively a dearth of skilled operatives of the lower ranks—plenty of good foremen and men competent to manage complicated machinery, but few who (at the wages) could take the place of the machine. Hence we find a preponderance of labor-saving devices, machinery supplants hand work in unexpected directions, for making and even assembling interchangeable parts for handling materials and products.

New Method of Street Car Propulsion.

THE Chicago Street Railway Company has contracted to test on its lines a new compressed air motor. Two of the new motors are on the way from Rome, N. Y., where they are built, and where one has been in successful operation for the past eight months. Seamless tubes of compressed air are stored under the car, connecting with the engine, which is also under the car; but before reaching the engine the air passes over a hot water tank, receiving heat by contact, and in the coldest weather a little vapor escaping from the engine is the only evidence of the force at work. It is claimed that a single charge of compressed air is sufficient to drive a car 17 miles. Compressed air may be transported in an auxiliary tank, thus providing for an indefinite run. It is said that any desired speed is easily attained, and the cost of operation is declared to be from 30 to 40 per cent. less than electrical or cable power. Other advantages claimed are: No poles, overhead wires, cables, pipes or conduits; no electrolysis of water and gas pipes by escaping currents; no obstructions to the fire department; no tearing up of streets for underground construction; no fatal accidents from live wires; no stalling of cars in time of riots by tampering with the source of power. If one-half of these claims are tenable the era of compressed air propulsion is at hand.

Of Interest to Foreign Importers.

THE CHAMBERS BROS. MFG. CO., of Philadelphia, Pa., manufacture a bolt and rivet clipper advertised on another page. This little device is designed for cutting off the ends of bolts and rivets on carriages, wagons, harness, etc. It will cut off all the bolts of a carriage in less than one-tenth of the time it requires for two men to do it in the old way and leave the ends of the bolts so that the nut can be run off and on with the fingers alone, thus proving that the thread is uninjured.

Every carriagemaker, wheelwright and blacksmith, implement and machinery manufacturer and harnessmaker will find it very useful, and hence should not be without it. The cutters may be taken out, reground and replaced without inconvenience.

A New Cash Register.

A NEW cash register has been introduced in the United States which has novel features not possessed by other devices of this kind. With this machine it is possible to record \$10,000 worth of business in a more compact form, it is claimed, than by any other register. By tipping the lever or handle bar two or three times it will give you double or triple the original number; thus, if you wish to get \$270 you pull the 90 cent lever three times; if \$270 then the \$90 lever is tipped three times. Every transaction is recorded. In addition it has the features of recording disks for "cash sales," "money paid out," "cash on account of sales," and "no sales," and altogether it seems to be an automatic bookkeeper.

—The superiority of American armor plate has again been proved at the Government testing grounds. This was a test of plate made by the Carnegie Company for Russia. A plate was struck nine times by imported Holtzer projectiles fired at great velocity. They struck fairly every time and smashed into fragments without penetrating the plate. As the Russian representatives said, "the plate was superb and passed the test almost untouched."

Miscellaneous Notes.

—Detroit, Mich., ships furnaces to England.

—The seamless tube is crowding out the older patterns.

—G. A. Crosby & Co., 176 South Clinton street, Chicago, Ill., U. S. A., have completed an order for some of their special sheet metal workers' machinery to go to Russia.

—The Brightman Furnace Company, of Cleveland, Ohio, U. S. A., made recent shipments to Germany, Austria, Belgium, England, Australia and the South American countries.

—The railroad is to invade another hermit country. An American firm have obtained the concession to build a line between Seoul and Chemulpo, in Corea, a distance of 30 miles.

—Aluminum is coming more into general use. The Pittsburg Reduction Co., Pittsburg, Pa., U. S. A., one of the principal makers of the metal, is receiving inquiries from China and Japan. In the latter country aluminum is being used for hammered art goods.

—What is believed to be the largest vein of coal in the world occurs at the strippings near Shenandoah, Pa., U. S. A. It is 50 feet thick, and so near the surface that it is simply quarried like stone. No fewer than 7,145,000 tons of coal were extracted from it last year by the Philadelphia and Reading Coal and Iron Company.

—The manufacture of wooden shoes is a growing industry in this country. American machinery enables the makers to sell them at prices ranging from \$1.80 to \$3. They are selling rapidly among people who work in laundries, breweries, creameries and other places where rubber has been used to protect the feet against damp and cold.

—The commerce of this country with the Holy Land shows a considerable contrast in the articles of import and export. The principal shipments from Jaffa to the United States, it is said, are oranges and other fruits, and we are sending iron bedsteads and various articles of hardware through Jaffa to the City of the Kings.

—A Welsh newspaper in discussing the subject of tin roofs brings to public notice the singular fact that while Great Britain has for years made this material for the world, the tin roof is entirely unknown in England. The Welsh know next to nothing about methods of putting on a tin roof, and those interested in introducing the use of Welsh tin plates for roofing English homes have in contemplation the importation of an American tinner to introduce American methods of usingterne plates.

—Foreign countries are finally coming around to the idea that to get the best in everything America is the place. No stronger proof of this fact is needed than the receipt a few days ago by the Specialty Carriage Company, Cincinnati, Ohio, of an order for six of its wagonettes for use in the Russian Government service. After these vehicles are landed at their destination the total cost of them, with transportation charges, etc., will no doubt be a deal higher than they could be purchased at home, but price cuts no figure in that case; quality and finish are to be considered, hence America gets preference.

THE TANITE COMPANY, Stroudsburg, Pa., U. S. A., are at the present time filling a large order for emery wheels for Finland. They have also just received a valuable order for 36-inch Tanite wheels from the Japanese Government. They advise us that they make frequent shipments to South America and Australia, and through Thomas Hamilton, 90 Cannon street, London, they are doing a steady trade with Great Britain, Sweden, Russia and other Continental countries.

THE CHICAGO METAL STAMPING COMPANY, Libertyville, Ill., U. S. A., are offering to the trade what they term the "Wanted" oil can. It is made of the best steel, galvanized, and can be handled as an ordinary can, the rubber tube being put in use only when filling lamps. The outside of the can is handsomely embossed. It weighs about 4½ pounds and is easy of transportation. It is always ready for use and wastes no oil. It is air-tight and so is well adapted for gasoline.

THE new impulse given to Japanese ambition and enterprise by recent events makes it very probable that the United States may open up a good trade in tools and machinery with that country. Japan is moving along lines clearly progressive because industrial. An official report shows 4,635 plants doing business, of which 315 dealt with transportation, 101 handled metal goods, 333 minerals and 28 tools and machinery. Some 500 plants used steam power, about half that number water power, 247 used both steam and water power, and the rest were dependent on manual labor alone.

MACHINERY is rapidly making its way in domestic uses. From the coffee mill to the sewing machine, ingenuity has supplied its numerous types of mechanism. These have been recently added to by an ingenious contrivance, by which floors of buildings can be scrubbed without the usual bending of the knee or the attention of a mop. The machine has a family likeness to the well-known lawn-mower. It is run on wheels and can do its sanitary business as rapidly as the machine can be pushed along. All it needs is plenty of water and a reasonable amount of muscle behind it. Thus it is one by one the burdens of labor are being removed, and while the workshop shares in the emancipation, the domestic side of life is gradually getting rid of its old harness, sometimes for the better, sometimes for the worse.

ECLIPSE



Bicycle Sundries—

Ladies' Black and Russet Shoe Dressings,
Rubber and Leather Cement,

For repairing Boots, Shoes and all Rubber and Leather Goods.
Send for Catalogue, FREE.

ECLIPSE CEMENT & BLACKING CO.

PHILADELPHIA, PA., U. S. A.



DAYTON BALL & CO., - Albany, N. Y.

MANUFACTURERS OF

U. S. A.

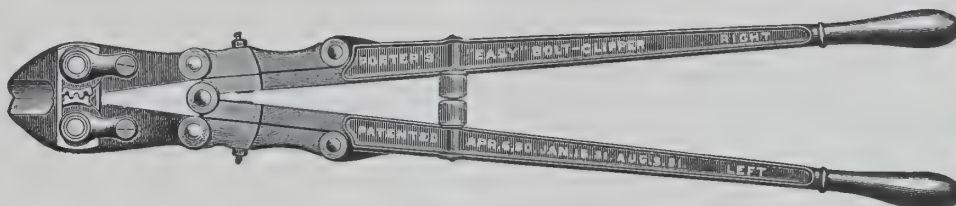
FINE LASTS.

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Orders filled through Commission
houses.
Correspondence solicited.

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SYDNEY, AUSTRALIA,
Agents for Australia and New Zealand.

THE "Easy" Bolt Clipper

IS THE BEST.



MANUFACTURED BY

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The Largest Manufacturers of **SHOE BLACKING** IN THE WORLD!

Orders can be sent through any reliable Commission House in the United States.

AMERICAN CHEMICAL MFG. & MINING CO., Manufacturers,
ROCHESTER, N. Y., U. S. A.

IF YOU WISH THE BEST
SEND US A TRIAL ORDER.

HANDY BOX FRENCH BLACKING, Size 5. Price, per gross, \$3.25, less 10 per cent.
HANDY BOX FRENCH BLACKING, Size 10. " " \$6.50, " 10 "

It is noted for its brilliant polish and its leather-preserving qualities. This patented box with the handle makes its use most convenient and can be used without soiling hands or clothing.

The Brewer Longitudinal Axle Lubricator.

Can be applied to any style or size of axle NOW on
your carriage or wagon.
No need of changing your PRESENT axles.

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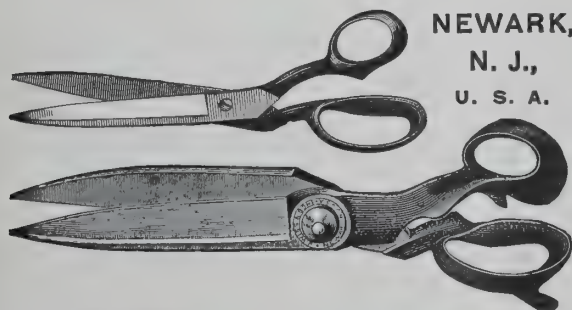
Infrequency of oiling. Absolute cleanliness, as "no oil escapes." Preservation of varnish, paint and clothing.

NEVER USE CASTOR OIL OR GREASE.
OIL OR GREASE THE AXLES.

ALWAYS USE SPERM OR OTHER MEDIUM-BODIED OIL.
FILL THE PAD FULL OF OIL, BUT NO MORE.

FOR FURTHER PARTICULARS ADDRESS:

BREWER LONGITUDINAL AXLE LUBRICATOR COMPANY,
BOSTON, MASS., U. S. A.



NEWARK, J. WISS & SONS,

N. J.,
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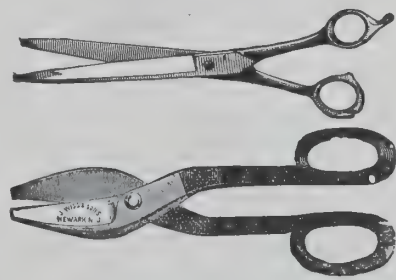
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STRAIGHT AND BENT TRIMMERS,
TAILOR SHEARS, BARBERS' SHEARS, TIN OR METAL
SNIPS, PRUNING SHEARS, LADIES' SCISSORS,
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Send for Illustrated Catalogue "E," and when ordering through Commission
Houses, kindly send us a duplicate of order.

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SUCCESSOR TO
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Every Description of Merchandise.

First-class Bank Remittances per sight on New York.

Correspondence Solicited.

YOKOHAMA, - JAPAN.



Our Trade in South Africa.

THE popular impression, says the *Oswego Palladium*, that South Africa is a wilderness given over to explorers, adventurers and the like will have to undergo revision in the light of the fact just made public, that during the year ended with last June, the value of the exports to that region from the United States was \$5,000,000. Such has been the growth of business since then that it is estimated that the value of the exports for the year ending with the coming June will be at least \$10,000,000. "Phenomenal" is the only word which fitly applies to such an expansion of trade; yet there are good grounds for the belief that this expansion will be well maintained for years to come, for the list of exports is exceedingly comprehensive, while as to many of the articles it can confidently be said that they will be able to hold their own against any competition from England.

No wonder the Powers of Europe are jealously competing for the possession of such a valuable and growing market! The wonder is that this country, with its inadequate shipping resources, should have been able to get so firm a footing in the Dark Continent.

Providing Beer Packages.

A NUMBER of concerns make this business a specialty, among them the Delta Cooperage Company, of Phillip Schwartzwalder & Sons, of New York, and the Cincinnati Cooperage Company, Cincinnati, O., being a few of these operators. The Jos. Schlitz Brewing Company and the Pabst Brewing Company, both Milwaukee concerns, manufacture 2,000,000 barrels of beer annually and consume for kegs 500 carloads of oak staves and heading. One would think as he looked at the substantial character of beer cooperage that it would last forever. A beer barrel would last much longer if the profits were less in the brewing season; as it is, not one-half of the beer kegs and half-barrels shipped from the brewery are returned.

The *Northwestern Lumberman*, speaking of the number of breweries, and trying to get at the amount of beer cooperage, has estimated that there are 1,700 breweries in the United States, which manufacture 33,000,000 barrels of beer, or about one-half barrel of beer to every man, woman and child. It follows that if the Milwaukee companies referred to produce one-sixteenth of the beer manufactured in the United States and call for 500 carloads of oak, the entire output would require sixteen times that amount, or 8,000 carloads annually. If these carloads average 10,000 feet, 80,000,000 feet of oak timber is consumed each year in beer cooperage, without figuring the amount of waste at the stave mill. If all this beer barrel material was loaded on standard 34-foot cars it would make a single train reaching 56 miles. Oak timber will not produce over an average of 3,000 to 5,000 feet to the acre, and you must cut over 20,000 acres to get this timber.

Modern Canal Digging.

AN INTERESTING method of handling large bodies of earth by automatic machinery is exhibited in the work now being carried on by the Chicago Drainage Canal Company. The work in question is done by a self-filling and self-dumping scraper, operated on a cable. About 119,000 cubic yards of the top soil on section six have been removed with this scraper, which was filled, conveyed and dumped by steam power furnished by an engine contained in a cabin. The scraper is pulled back and forth between two towers placed at either end of the excavation. The towers are mounted on cars running upon a temporary track, so that the entire plant may be moved along with the progression of the work. As many as 500 cubic yards of soil are often thus removed in a day of 10 hours.

THE KILBOURNE & JACOBS MANUFACTURING COMPANY, Columbus, Ohio, U. S. A., whose advertisement for many years has appeared upon our front cover, reports that since putting their "Columbus" and "New Era" wrought steel sinks upon the market the trade for the same has been almost double each year, until the past ample facilities of that company have been found insufficient and consequently they have just completed a new warehouse to be used entirely for these goods. The Kilbourne & Jacobs Manufacturing Company are well known manufacturers of wheelbarrows, road scrapers, etc., which have found a wide market in foreign countries.

EX-GOVERNOR C. S. PAGE, Hyde Park, Vt., recently shipped a carload of skins from his hidehouse to France. A short time before a shipment was made to Turkey, in Asia Minor. The foreign trade in hides and skins, commencing in Wales five years ago, was extended to England, thence to Belgium, to France, Italy, Switzerland, Germany, Holland, and finally has been opened with Turkey. Shipments of hides are received from all parts of the United States, though principally confined to the New England and Middle States and Canada. From the extreme western part of the last-mentioned place many hides are obtained. The large cities of the South furnish many also, but the largest shipments of hides are received from Denver, Col.

—Kansas City, Mo., U. S. A., is now the leading hay-press manufacturing city of the United States and it necessarily follows that as it leads other American cities in this line it leads the world in the manufacture of hay-baling machinery. It is claimed that the several companies now making hay presses in Kansas City have each more or less foreign trade.

Notes of Interest.

—A new process of coloring leather by electricity is gaining favor. The leather is placed upon a zinc table, which forms the positive pole. The dyeing material is poured over this, and the negative pole connected to the leather. Under the action of the current the coloring matter penetrates the surface of the leather. Patterns may be made upon the leather by covering it with a pattern plate connected to the negative pole. The parts directly beneath the plate will be lighter than those exposed.

—A cinder guard for the relief of postal clerks on postal cars has been adopted by the Government and will shortly be placed on all fast trains which take mail from a crane at local stations without stopping. The device is attached to the side doors of postal cars, and protects the eyes and face of the clerk while operating the crane to receive the mail. The device is constructed of heavy sheet iron with a glass front through which an unobstructed view can be obtained while handling the mail catcher.

—Recently we announced the discovery of the method of making cellulose or water-tight packing from the pith of corn stalks. Now there comes another analogous invention. Mr. W. P. Emery, of Topeka, Kan., has received a patent for pavement brick made from straw. It is said to be only about one-third the weight of ordinary brick and can be made at half the cost. This inventor claims that the weak straw of the West, which is only burned to get rid of it, is sufficient to pave all the streets of all the cities of the country.

—The Germans have just begun to appreciate the merits of the American bicycle, and United States Consul Mason, at Frankfort, has contributed a long report to the State Department explaining how the American machine came to gain the supremacy over the English models so extensively copied in Germany. He tells how the American makers may introduce their machines to the best advantage and gives much information as to the peculiarities of German taste that must be consulted to insure the success of any effort to induce the Germans to use the foreign wheel.

—The first shipment of marble ever made from America to Australia was made April 16th, by the Tennessee Producers' Marble Company, of Knoxville. It was native Knox County marble, a carload in all, and was billed to George E. Crain & Co., Sydney, New South Wales, Australia, being shipped by rail to New York and thence direct by steamship to its far-off destination. The value is intrinsic—about \$500—but it shows where we are known. It was the variegated marble in two varieties, great bend and fire, and in the rough state, designed for interior decorations. This means much for the marble industry of East Tennessee.

—Dr. A. T. Perkins, of Chicago, has patented a process for keeping fruits and perishable products during transportation by the use of sterilized air. This is important, as by its use shippers are promised better results than are now obtained by the use of ice. While the system, if successful, will nearly double the capacity of vehicles of transportation, many other benefits will arise, among which are decreased cost in handling, lessened freights, etc. Contracts have already been made in Chicago for an extensive test of the method. The fruit syndicate of California is also much interested in the matter.

—The great revolution predicted in lighting systems by the introduction of acetylene gas is somewhat slow materializing. Satisfactory tests, however, have been made on a small scale. A company in New York is now engaged in the attempt of adapting the gas to the ordinary uses of the household by condensing it in small steel cylinders or flasks 8 inches long and 4 inches in diameter, which will contain 1 pound of the gas and last for 15 hours, and which can be placed in a lampstand the size of the ordinary kerosene lamp. In dwelling houses with gas fixtures tanks can be attached to the pipes now in use.

—President Barber, of the Diamond Match Company, has, it is reported, closed a contract with the French Government by which the company will receive \$100,000 for machinery, and a royalty of \$100,000 a year for five years. The French Government has a monopoly of the manufacture of matches, and has been endeavoring for some time to secure the use of patents controlled by the Diamond Match Company. The officers of the company in Chicago say that negotiations are open with Italy, Austria and Belgium, with every prospect of successful issue. The feature of the last annual report was the reduction of the cost of manufacture of matches.

—Fully 10,000 American horses have found a market in the chief cities of Germany within the past year, and they have given general satisfaction—except, of course, to the local dealers who have found their home market invaded, and who have promptly brought such pressure to bear upon the Imperial Government that the usual result in such cases (a system of inspection) has followed. The next step in the process of exclusion, if precedent shall avail, will be the announcement on high microscopic authority that the American horse is unhealthy, and that the protection of the domestic breed from epizooty and the other ills that horseflesh is heir to demands that he shall be barred out absolutely.

—A conference of the British iron trade was opened in London on May 6th. The speeches made and the papers read dwelt on the serious competition which is being offered to the British iron trade from American and German sources. Sir A. Hickman, representative in Parliament for North Wolverhampton, who is himself an ironmaster and influential in the railway world, presided over the conference. He urged that a reduction of one farthing a ton in the charge for the carriage of minerals would revolutionize the English trade. Another speaker thought that the chief reason for England's loss of trade was the great strikes and lockouts which have occurred in the iron trade of late years.

KELLY AXE MANUFACTURING CO.

HANDLED AXES.

ESTABLISHED IN 1874.

The Largest Exclusive Axe Makers
in America.

Sole Patentees and Makers of the

W. C. KELLY

"PERFECT" and "FALLS CITY"

HIGH GRADE Steel Axes FOR EXPORT.

The Blades of our Axes are so shaped that they will
cut deepest in the wood with the least amount of labor.WILL BURST THE CHIPS AND
NOT HANG IN HARD WOOD.

—Every Axe Tested before leaving the Factory.—

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No. 82 Chambers Street.



A COMBINATION LOCK.

A Model of Perfection.

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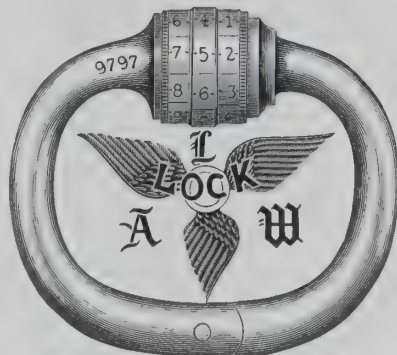
BICYCLE AND GENERAL USE.

Weight, 2 ozs. Made of Aluminum.
No two locks with same combination.
No chain. No key. Can open in the
dark. Locks two wheels together.
Reinforced with steel.

DISCOUNTS TO TRADE.

Price, 75 cts.

\$9.00 per doz.



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Elegant Design and Finish.

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increasing popularity and large sales
which these shears have obtained in
Spanish America, testify their superi-
ority. 350 sizes made. Sold by all
the leading export commission firms.
Illustrated catalogues sent upon applica-
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TAILORS' SHEARS,

with lever spring and adjustable
screw; can be easily taken apart for
cleaning and grinding them; the screw
never gets loose; easily repaired.

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Sporting Boats,
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Life Preservers.

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Folding Canvas and Wire Cots, Spring and Iron Beds,

WOVEN WIRE MATTRESSES, SOLID AND DOUBLE RAIL,
HAIR, WOOL, COTTON, FIBRE AND EXCELSIOR MATTRESSES,

For a canvas cot try the "CHAMPION."
Strong, durable, close-folding, light, best
of everything, and in its making the cheap-
est cot for quality made, with two styles of
head, one a spring head (as shown in cut),
the other a raised head, canvas stretched
tight.

For a wire cot try the "ELECTRIC."
Cheap only in price. If
once tried,
it is always

called for. Send for sample order and be satisfied. We
do not ask you to buy a quantity at first; try a small
order, large orders always follow.



Send for catalogues. Largest lines made in America. 30 kinds of iron beds alone.



We pack in 1 doz., 2 doz. and 3 doz. boxes, suitable to
the trade. Also, 1 gross in cases loose, containing one
of our Terra-Cotta Statues free.

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GEO. A. MOSS, - NEW YORK.

MOSS' UNION BLACKING



NONE BETTER on the MARKET.

Orders filled through any responsible
Commission House.

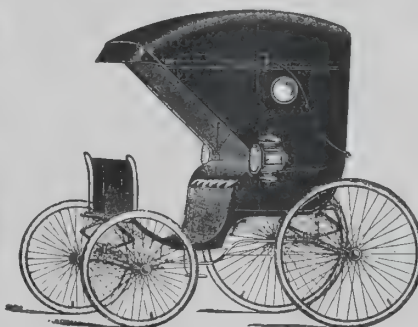
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REASON:

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this one class of vehicles alone.
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when real merit is considered.
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transportation charges are re-
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RESULT:

Low prices for best Phaetons built.
Send for our illustrated booklet
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Address SALES DEPARTMENT.

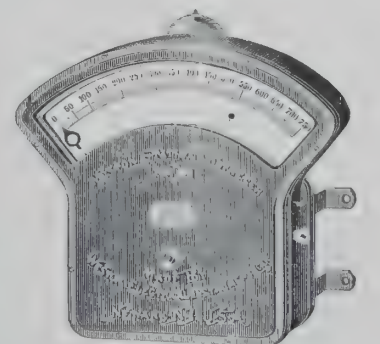
THE COLUMBUS PHAETON CO.
COLUMBUS, OHIO, U. S. A.

WESTON ELECTRICAL INSTRUMENT CO.

114-120 William St., Newark, N. J.
U. S. A.

Illuminated Dial Station Instruments.

These instruments are based upon the same
general principle and are just as accurate as our
regular Standard Portable Direct Current Volt-
meters and Ammeters, but are much larger, and
the working parts are inclosed in a neatly de-
signed dust-proof cast-iron case which effectively
shields the instruments from disturbing influ-
ences of external magnetic fields.



Weston Standard Illuminated Dial
Potential Indicator. Style B.

Mention the AMERICAN EXPORTER when writing for Catalogues.

FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude	Portugal	4.422 gallons.	Fanega (dry)	Chile	2,575 bushels.	Oke	Turkey	2,854.18 pounds.
Ardeb	Egypt	7,890.7 bushels.	do	Cuba	1,599 bushels.	do	Hungary, Wallachia	2.5 pints.
Are	Metric	0.02471 acre.	do	Mexico	1,547.28 bushels.	Pic	Egypt	21 1/4 inches.
Arobe	Paraguay	25 pounds.	do	Morocco	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul	Borneo and Celebes	135.64 pounds.
Arratel or libra	Portugal	1.011 pounds.	do	Uruguay (double)	7,776 bushels.	do	China, Japan and Sumatra	133 1/2 pounds.
Arroba (dry)	Argentine Republic	25.3175 pounds.	do	Uruguay (single)	3,888 bushels.	do	Java	135.1 pounds.
do	Brazil	32.38 pounds.	do	Venezuela	1,599 bushels.	do	Philippine Islands	139.45 pounds.
do	Cuba	25.3664 pounds.	Fanega (liquid)	Spain	16 gallons.	do	(hemp)	
do	Portugal	32.38 pounds.	Peddan	Egypt	1.03 acres.	do	Philippine Islands	140 pounds.
do	Spain	25.38 pounds.	Frail (raisins)	Spain	50 pounds.	Pie	Argentine Republic	0.9478 foot.
do	Venezuela	25.4024 pounds.	Frasco	Argentine Republic	2,506 quarts.	do	Castilian	0.91407 foot.
Arroba (liquid)	Cuba, Spain and Venezuela	4.263 gallons.	do	Mexico	2.5 quarts.	Pik	Turkey	27.9 inches.
Arshine	Russia	28 inches.	Fuder	Luxemburg	264.17 gallons.	Pood	Russia	36.112 pounds.
Arshine (sq're)	do	5.44 square feet.	Garnice	Russian Poland	0.88 gallon.	Pund (pound)	Denmark, Sweden	1.102 pounds.
Artel	Morocco	1.10 pounds.	Gram	Metric	5.432 grains.	Quarter	Great Britain	8.252 bushels.
Baril	Argentine Republic and Mexico	20.0787 gallons.	Hectare	do	2.471 acres.	do	London (coal)	36 bushels.
Barrel	Malta (customs)	11.4 gallons.	Hectolitre	do	2.833 bushels.	Quintal	Argentine Republic	101.42 pounds.
do	Spain (raisins)	100 pounds.	Dry	do	26.417 gallons.	do	Brazil	130.06 pounds.
Berkovet	Russia	361.12 pounds.	Liquid	Austria-Hungary	1.422 acres.	do	Castile, Chile, Mex- ico and Peru	101.61 pounds.
Bongkal	India	832 grains.	Joch	Japan	4 yards.	do	Greece	123.2 pounds.
Bonw	Sumatra	7,096.55 sq're metres.	Ken	Metric	2,2046 pounds.	do	Newfoundland (fish)	112 pounds.
Bu	Japan	0.1 inch.	Kilogram (kilo)	do	0.621376 mile.	do	Paraguay	100 pounds.
Butt (wine)	Spain	140 gallons.	Kilometre	Russia	216 cubic feet.	do	Syria	125 pounds.
Cafiso	Malta	5.4 gallons.	Klafter	Japan	5.13 bushels.	do	Metric	220.46 pounds.
Candy	India (Bombay)	529 pounds.	Kota	Russia	3.5 bushels.	Rottle	Palestine	6 pounds.
do	India (Madras)	500 pounds.	Korree	Belgium, Holland	85.134 bushels.	do	Syria	5 1/2 pounds.
Cantar	Morocco	113 pounds.	Last	England (dry malt)	82.52 bushels.	Sagen	Russia	7 feet.
do	Syria (Damascus)	575 pounds.	do	Germany	2 metric tons (4,480 pounds.)	Salm	Malta	490 pounds.
do	Turkey	124,7086 pounds.	do	Prussia	112.29 bushels.	Se	Japan	3.6 feet.
Cantaro, Cantar	Malta	175 pounds.	do	Russian Poland	11 1/2 bushels.	Seer	India	1 pound 13 ounces.
Carga	Mexico and Salvador	300 pounds.	do	Spain (salt)	4,760 pounds.	Shaku	Japan	10 inches.
Catty	China	1.333 1/3 (1 1/3) pounds.	League (land)	Paraguay	4,633 acres.	Sho	do	1.6 quarts.
do	Japan	1.31 pounds.	Li	China	2,115 feet.	Standard (St. Petersburg)	Lumber measure	165 cubic feet.
do	Java, Siam, Malacca	1.35 pounds.	Libra (pound)	Castilian	7,100 grains (troy).	Stone	British	14 pounds.
do	Sumatra	2.12 pounds.	do	Argentine Republic	1,0127 pounds.	Suerte	Uruguay	2,700 cuadras (see cua- dra).
Centaro	Central America	4.2631 gallons.	do	Central America	1,043 pounds.	Tael	Cochin China	590.75 grains (troy).
Centner	Bremen, Brunswick	117.5 pounds.	do	Chile	1,014 pounds.	Tan	Japan	0.25 acre.
do	Darmstadt	110.24 pounds.	do	Cuba	1,0161 pounds.	To	do	2 pecks.
do	Denmark, Norway	110.11 pounds.	do	Mexico	1,01465 pounds.	Ton	Space measure	40 cubic feet.
do	Nuremberg	112.43 pounds.	do	Peru	1,0143 pounds.	Tonde (cereals)	Denmark	3,947.83 bushels.
do	Prussia	113.44 pounds.	do	Portugal	1,011 pounds.	Tondeland	do	1.36 acres.
do	Sweden	93.7 pounds.	do	Uruguay	1,0143 pounds.	Tsubo	Japan	6 feet square.
do	Vienna	123.5 pounds.	do	Venezuela	1,0161 pounds.	Tsun	China	1.41 inches.
do	Zollverein	110.24 pounds.	do	Metric	1,0567 quarts.	Tunna	Sweden	4.5 bushels.
do	Double or metric	220.46 pounds.	Litre	Greece	1.1 pounds.	Tunnland	do	1.22 acres.
Chih	China	14 inches.	Livre (pound)	Guiana	1,0791 pounds.	Vara	Argentine Republic	34.1208 inches.
Coyan	Sarawak	3,098 pounds.	Load	England (timber)	Sq're, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	do	Castile	0.914117 yard.
do	Siam (Koyan)	2,667 pounds.	Manzana	Costa Rica	1 1/2 acres.	do	Central America	38.874 inches.
Cuadra	Argentine Republic	4.2 acres.	Marc	Bolivia	0.507 pound.	do	Chile and Peru	33.367 inches.
do	Paraguay	78.9 yards.	Maund	India	82 1/2 pounds.	do	Cuba	33.384 inches.
do	Paraguay (square)	8,077 square feet.	Metre	Metric	39.37 inches.	do	Curacao	33.375 inches.
do	Uruguay	Nearly 2 acres.	Mil	Denmark	4.68 miles.	do	Mexico	33 inches.
Cubic metre	Metric	35.3 cubic feet.	do	Denmark (geograph- ical)	4.61 miles.	do	Paraguay	34 inches.
Cwt. (hundred- weight)	British	112 pounds.	Morgen	Prussia	0.63 acre.	do	Venezuela	33.384 inches.
Dessiatine	Russia	2,6997 acres.	Oke	Egypt	2,7225 pounds.	Vedro	Russia	2,707 gallons.
do	Spain	1,599 bushels.	do	Greece	2.84 pounds.	Verges	Isle of Jersey	71.1 square rods.
Drachme	Greece	Half ounce.	do	Hungary	3,0817 pounds.	Verst	Russia	0.663 mile.
Dun	Japan	1 inch.				Vlocka	Russian Poland	41.98 acres.
Egyptian wts. and measures	(See CONSULAR RE- PORTS NO. 144.)							
Fanega (dry)	Central America	1,5745 bushels.						

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes—ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 24.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.

Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.)
Metre equals 39.37 inches.
Decametre (10 metres) equals 393.7 inches.
Hectometre (100 metres) equals 328 feet 1 inch.
Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10
inches).
Myriametre (10,000 metres) equals 6.2137 miles.

Metric surface measures.

Centare (1 square metre) equals 1,550 square inches.
Are (100 square metres) equals 119.6 square yards.
Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.

Length.	Surface.	Capacity.	Weight.	Notation.
Myriametre			Metric ton	1,000,000
Kilometre			Quintal	100,000
Hectometre			Myriagram	10,000
Decametre			Kilogram	1,000
Metre			Hectogram	100
Decimetre			Decagram	10
Centimetre			Gram	1
Millimetre			Decigram	0.1
			Centigram	0.01
			Milligram	0.001

EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.

1 kilometre	0.62137 mile.	1 mile	1.60935 kilometres.
1 centimetre	3.28083 feet.	1 yard	0.914402 metre.
1 metre	0.3937 inch.	1 foot	0.304801 metre.
1 hectare	2.471 acres.	1 inch	25.4001 millimetres.
1 are	119.6 square yards.	1 square mile	2.59 square kilometres.
1 metric ton	2,204.63 pounds.	1 acre	0.4047 hectare.
1 kilogram	2.20463 pounds.	1 square foot	9.29 square decimetres.
1 gram	15.43236 grains.	1 pound	0.45359 kilogram.
1 hectolitre	2.8377 bushels.	1 grain	64.7989 milligrams.
1 hectolitre	26.417 gallons.	1 bushel	0.35239 hectolitre.
1 litre	1.0567 quarts.	1 gallon	3.78543 litres.
1 stere	1.308 cubic yards.	1 cubic foot	0.02832 cubic metre.

METRIC WEIGHTS AND MEASURES.

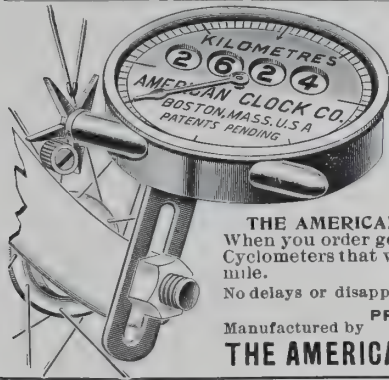
Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.
Millimetres $\times 25.4$ = inches.
Centimetres $\times 0.3937$ = inches.
Centimetres $\times 2.54$ = inches.
Metres $\times 39.37$ = inches. (Act Congress.)
Metres $\times 3.281$ = feet.
Metres $\times 1.094$ = yards.
Kilometres $\times 0.621$ = miles.
Kilometres $\times 1.6093$ = miles.
Kilometres $\times 3.2807$ = feet.
Square millimetres $\times 0.0155$ = sq. inches.
Square millimetres $\times 645.16$ = sq. inches.
Square centimetres $\times 0.155$ = sq. inches.

Square centimetres $\times 6.451$ = sq. inches.
Square metres $\times 10.764$ = sq. feet.
Square kilometres $\times 247.1$ = acres.
Hectare $\times 2.471$ = acres.
Cubic centimetres $\times 16.388$ = cubic inches.
Cubic centimetres $\times 3.69$ = fl. drams.
Cubic centimetres $\times 29.57$ = fluid oz. (U. S. P.)
Cubic metres $\times 35.315$ = cubic feet.
Cubic metres $\times 1.308$ = cubic yards.
Cubic metres $\times 264.2$ = gallons (231 cu. in.)
Litres $\times 61.022$ = cubic in. (Act Congress.)
Litres $\times 33.84$ = fluid ounces (U. S. Phar.)
Litres $\times 0.2642$ = gallons (231 cu. in.)
Litres $\times 3.785$ = gallons (231 cu. in.)

Litres $\times 28.316$ = cubic feet.
Hectolitres $\times 3.531$ = cubic feet.
Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)
Hectolitres $\times 0.131$ = cubic yards.
Hectolitres $\times 26.42$ = gallons (231 cu. in.)
Grams $\times 15.432$ = grains. (Act Congress.)
Grams $\times 981$ = dynes.
Grams (water) $\times 29.57$ = fluid ounces.
Grams $\times 28.35$ = ounces avoirdupois.
Grams per cu. cent. $\times 27.7$ = lbs. per cu. in.
Joule $\times 0.7373$ = foot pounds.
Kilograms $\times 2.2046$ = pounds.
Kilograms $\times 35.3$ = ounces avoirdupois.
Kilograms $\times 1,102.3$ = tons (2,000 lb.)

Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Kilogram-metres $\times 7.233$ = foot lbs.
Kilo per metre $\times 0.672$ = lbs. per foot.
Kilo per cu. cent. $\times 0.026$ = lbs. per cu. foot.
Kilo per cheval $\times 2.235$ = lbs. per H. P.
Kilowatts $\times 1.34$ = horse-power.
Watts $\times 746$ = horse-power.
Watts $\times 0.7373$ = foot pounds per second.
Calorie $\times 3.968$ = B. T. U.
Cheval vapeur $\times 0.9863$ = horse-power.
(Centigrade $\times 1.8$) $\div 32$ = degree Fahrenheit.
Franc $\times 0.193$ = dollars.
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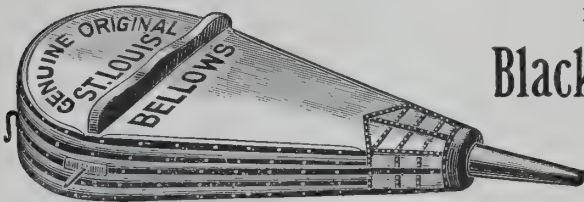
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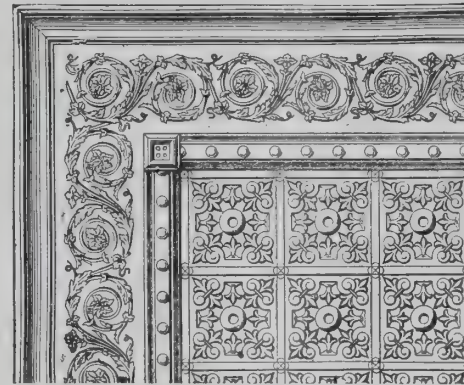
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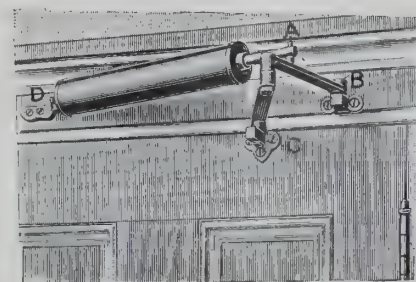
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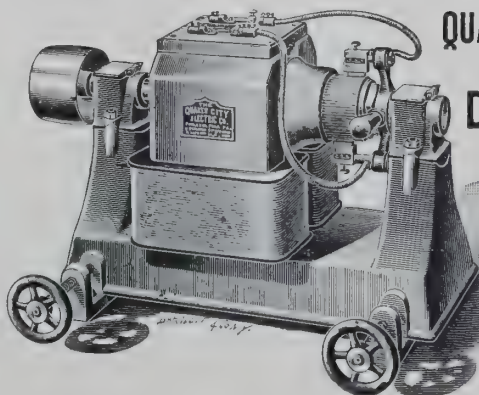
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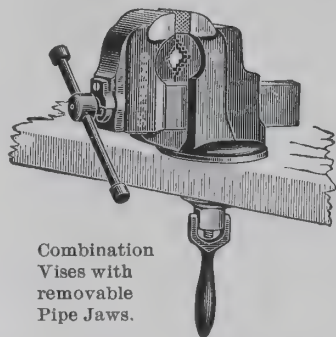
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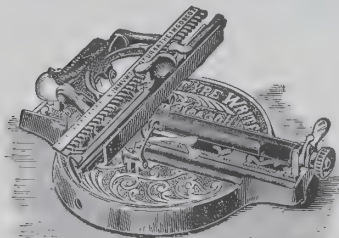


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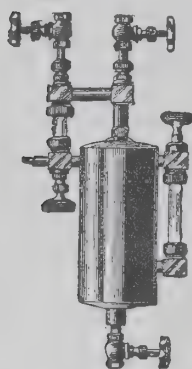
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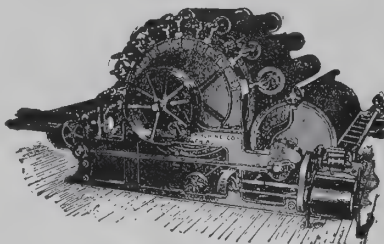
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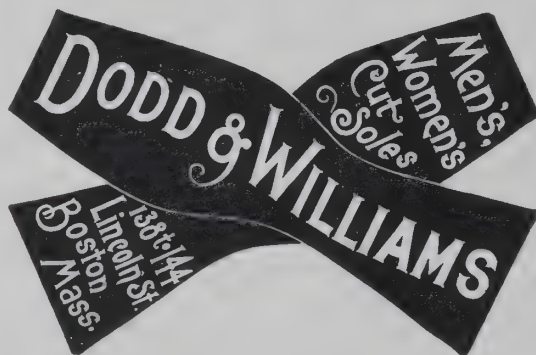
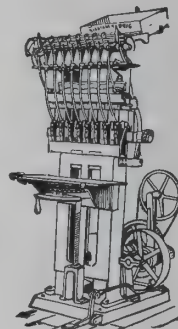
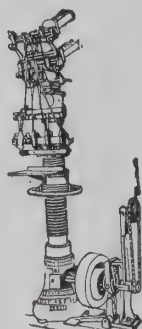
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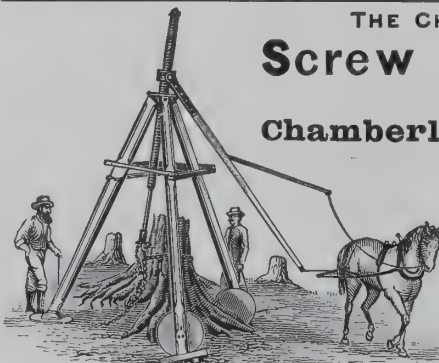
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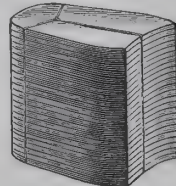
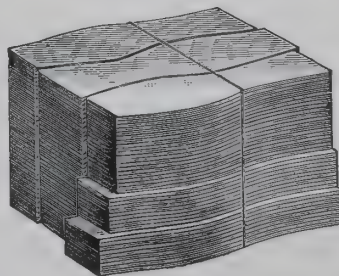
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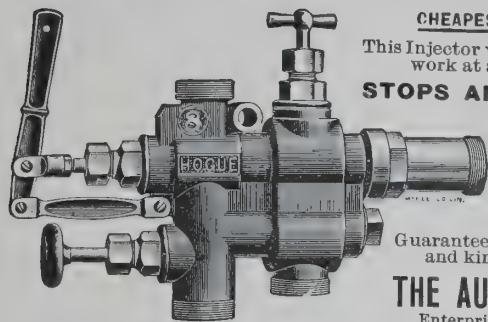


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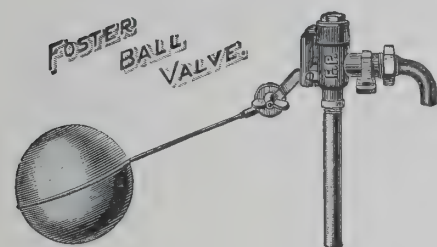
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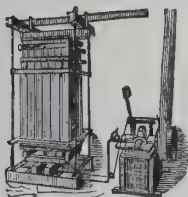
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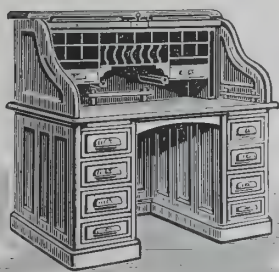
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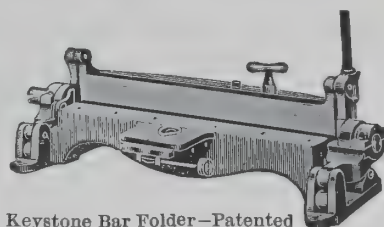
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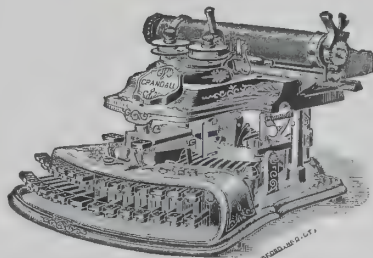
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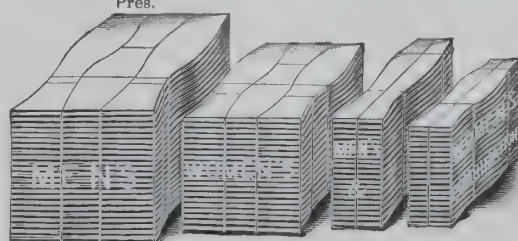
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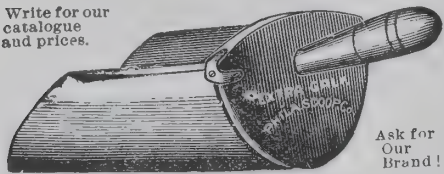
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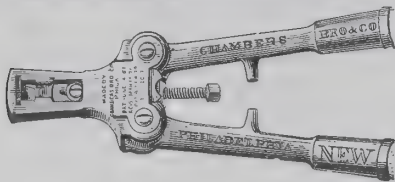
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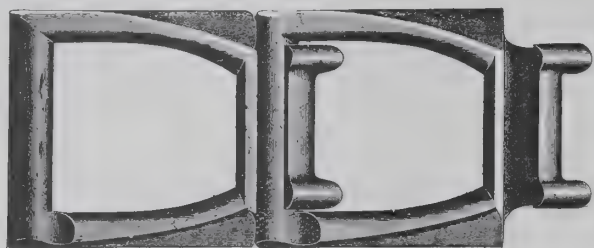
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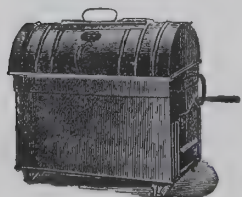
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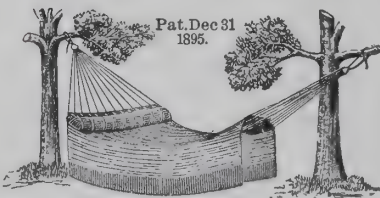
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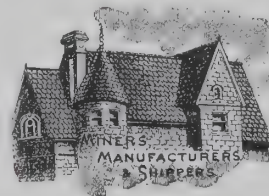
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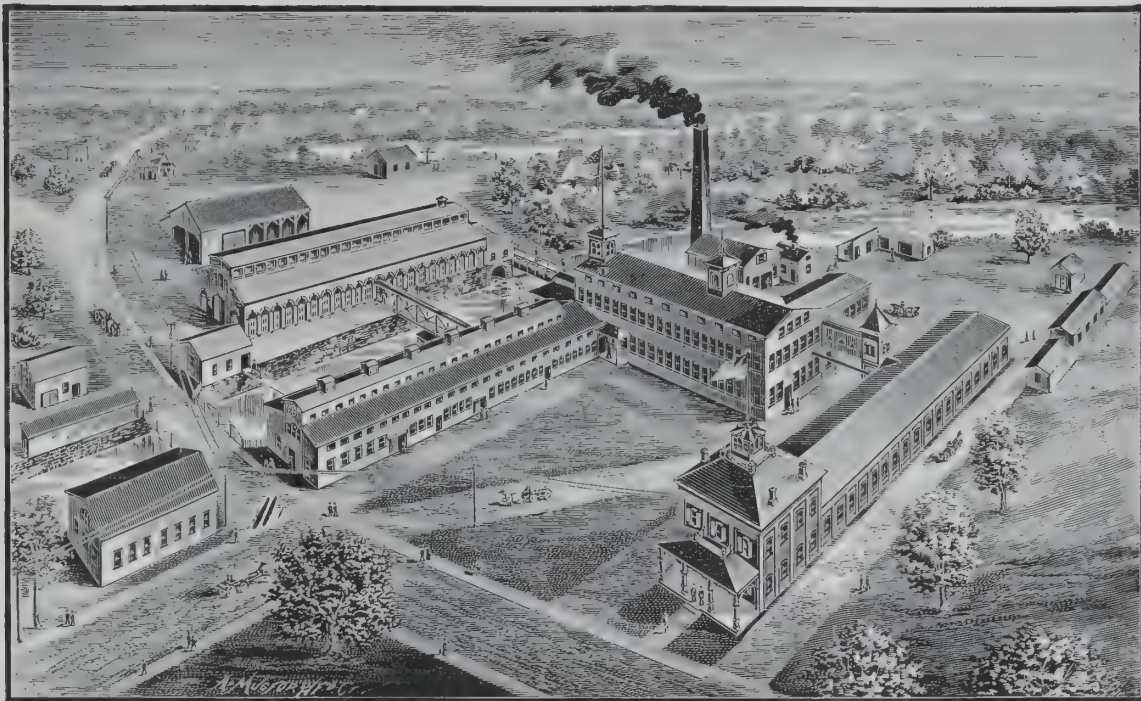
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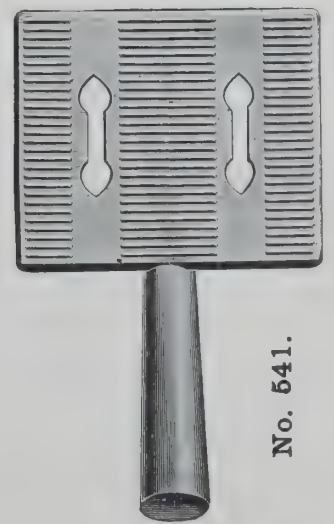
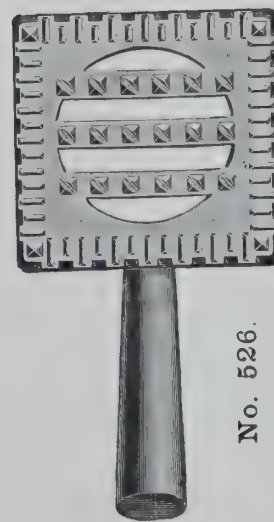
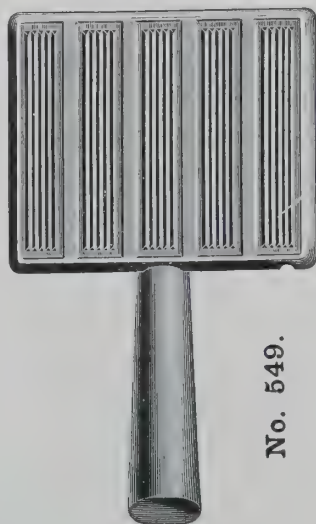
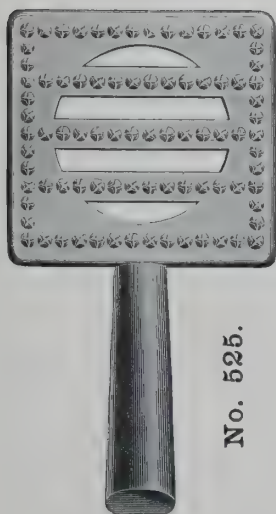
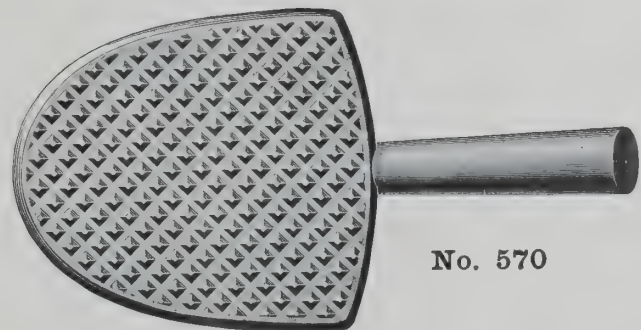
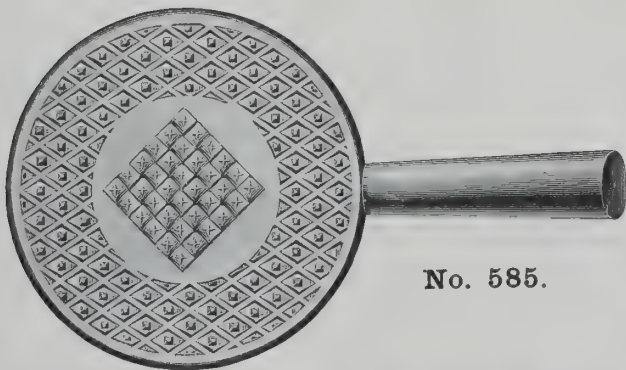
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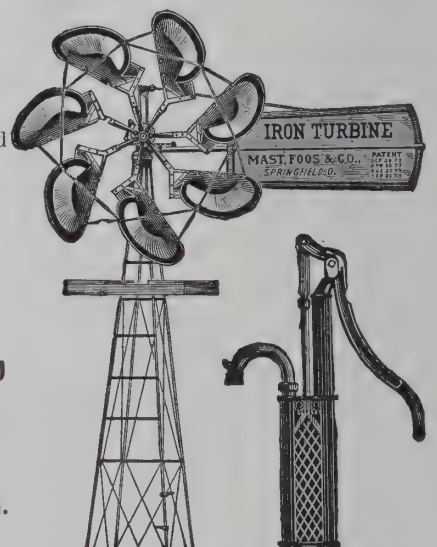
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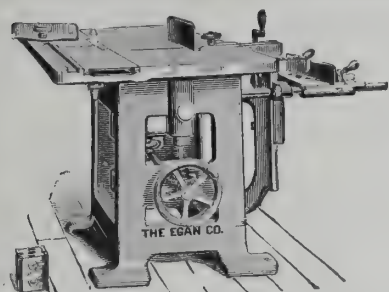
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LIGHTEST RUNNING.



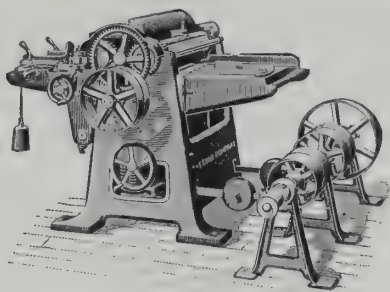
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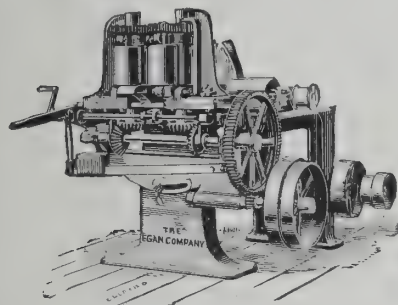
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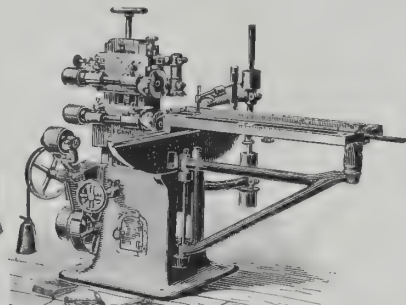
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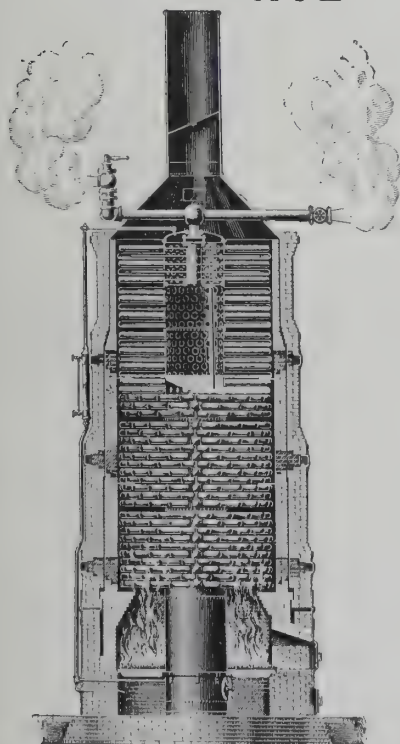


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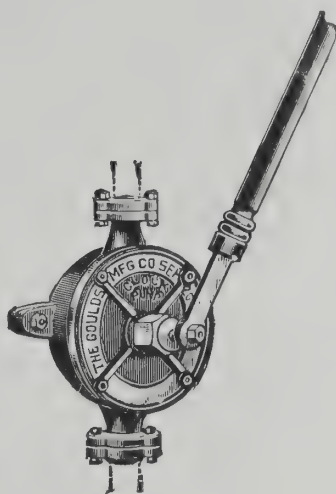


Fig. 965.

FIG 965—SIZES, PRICES, ETC.

No.	Approximate Capacity p. min.	SUCTION.	BRASS-FITTED.
1	4 gals.	1/8 in. pipe	\$5.00
2	5 "	3/4 "	6.00
3	6 "	1 "	7.25
4	9 "	1 1/4 "	9.00
5	13 "	1 1/2 "	10.00
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8	26 "	2 "	17.50
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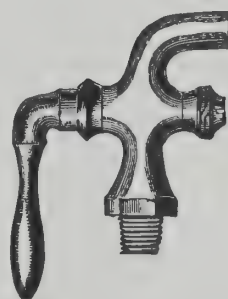
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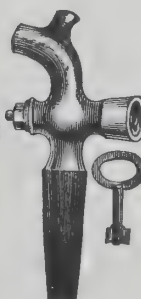
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Works at
Haydenville,
MASS.



Established
1845.

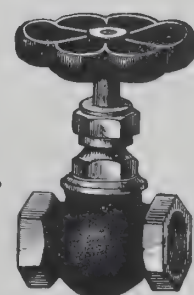


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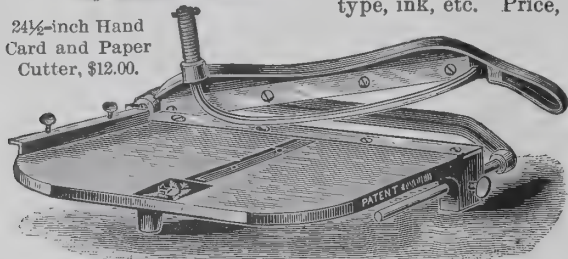
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WATER
and GAS.



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Cutter, \$12.00.



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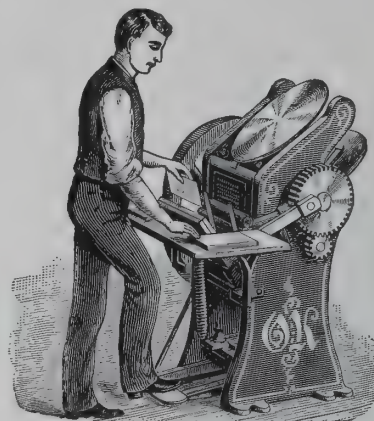
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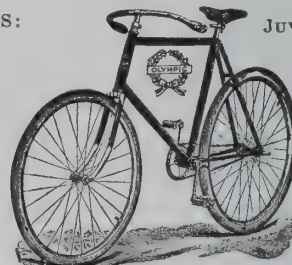
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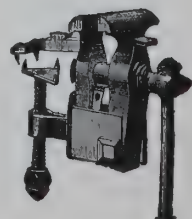
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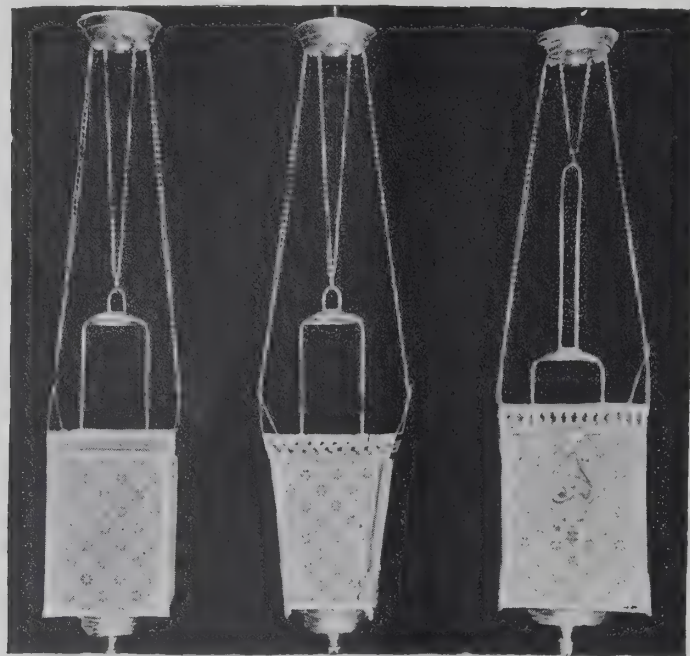
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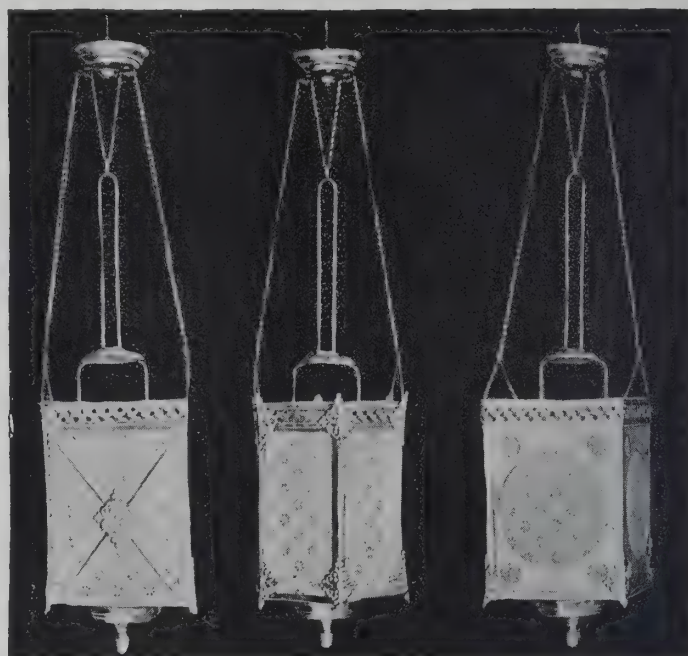


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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	De Laval Separator Co.—Cream Separators..... 35
American Chemical Mfg. & Mining Co.—Shoe Blacking..... 39	Diago, Frederico C..... 35
American Lamp & Brass Co.—Lamps.. 8	Dietz, R. E. Co.—Lamps..... 41
American Clock Co.—Cyclometers..... 43	Diamond Hardware Co.—Stove Polishing Mitten..... 31
American Writing Machine Co.—Caligraph..... 21	Dodd & Williams—Cut Soles and Leather Donegan & Swift—Engines, Injectors, etc..... 47
Armitage-Herschell Co.—Steam Riding Gallery..... 45	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 33
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Doig, W. S.—Box Nailing Machines..... 44
Automatic Injector Co.—Boiler Injectors..... 45	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc..... 33
Ayer, J. C. Co.—Patent Medicines..... 25	Douglas, W. & B.—Pumps, etc..... 4
Ball & Co., Dayton—Shoe Lasts..... 39	Dry Kalsomine & Fresco Paint Works..... 23
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Eagle Cotton Gin Co.—Cotton Gins..... 31
Barnett Co., G. & H.—Files..... 21	Eclipse Cement & Blacking Co..... 41
Baxter Register Co.—Cash Registers... 35	Eco Magnetic Clock Co.—Electric Clocks..... 46
Baxter, Schenkelberger & Co.—Cut Soles..... 31	Electric Emery Wheel Co..... 46
Bay State Cut Sole Co..... 45	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Bellis Cycle Co..... 33	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Bignall & Keeler Mfg. Co.—Pipe Threading and Cutting Machines... 44	Faxon & Co.—O. J. Bicycles..... 23
Blanchard Machine Co.—Disintegrators 42	Flagg Mfg. Co.—Shoe Machinery..... 35
Brewer Longitudinal Axle Lubricator Co..... 39	Foster Mfg. Co., F. W.—Ball Cocks.... 45
Brown & Co., B. F.—Shoe Dressing..... 25	Fulton Iron Works—Sugar Cane Mills 26
Buffalo Cycle Co.—Bicycles..... 37	Fulton Stamp Works..... 40
Buffalo Portable Steel House Co..... 46	Furbush & Son Machine Co., M. A..... 44
Burgess, Edward A.—Box Nailing and Trimming Machines..... 46	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 25
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 45	General Electric Co.—Electrical Machinery..... 16
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 35	Gillie, Goddard & Co.—Carousels..... 46
Chamberlin Mfg. Co.—Stump Pullers... 44	Globe Buffer Co.—Shoe Machinery..... 35
Chambers Bros. Co.—Bolt Clippers..... 46	Goderich Organ Co.—Organs, Stools, etc..... 45
Chandler & Taylor Co.—Steam Engines and Boilers..... 37	Goubert Mfg. Co..... 16
Chicago Metal Stamping Co..... 43	Gould Packing Co.—Steam and Water Packing..... 23
Christen & Sons, F.—Bellows..... 43	Goulds Mfg. Co.—Pumps of all kinds... 5
Collins Plow Co.—Plows, Hay and Straw Presses, etc..... 29	Gout Mfg. Co., David D. A..... 43
Columbus Phaeton Co..... 41	Green Bros.—Watchmakers' and Jewelers' Tools and Supplies..... 6
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 41	Hancock Inspirator Co.—Boiler Feeders 47
Cornell & Co., F. H.—Boiler Oil Injector 44	Harrington & King Perforating Co.—Mining Screens..... 25
Crandall Machine Co.—Typewriters.... 45	Hart Mfg. Co.—Faucet Can..... 43
Cretors & Co., C.—Peanut Roasters.... 46	Hartshorn Co., Stewart—Shade Rollers 2
Crosby Steam Gage and Valve Co.—Safety and Water Valves..... 37	Hastings & McIntosh Truss Co..... 31
Cumberland Iron & Steel Shafting Co. 37	Hathaway, C. L. & Sons—Shoe Dressing..... 48
Deane Steam Pump Co.—Steam Pumps 33	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 5
Dederick, P. K. & Co.—Agricultural Implements..... 43	Hazelton Boiler Co..... 5
Densmore Typewriter Co..... 31	Heller & Bros.—Files, Rasps, etc..... 35
De la Balze Hermanos..... 31	Henderson & Co., C. H.—Cut Soles.... 39
De Lamater Iron Works—Hot-Air Pumping Engines..... 40	Holmes & Edwards Silver Co.—Spoons and Forks..... 6
	Horrocks Desk Co..... 45
	Houchin & Huber—Soap and Candle Machinery..... 37

PAGE	PAGE
Huntley Mfg. Co.—Flour Mill Machinery..... 31	Premier Pen Co.—Fountain Pens..... 31
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 43	Quaker City Electric Co.—Dynamos and Motors..... 43
James & Co., George—Soles, Taps, Heels, etc..... 44	Randall & Son, P. D.—Bolt Clippers.... 37
Jeffrey Mfg. Co.—Detachable Chain Belting..... 46	Rhyder, W. J.—American Commercial Agency..... —
Jenkins Bros.—Packings..... 23	Rockwell & Co., C. A.—Coffee Mills.... 43
Kalamazoo Railroad Velocipede & Car Co..... 48	Root Co., A. I.—Beekeepers' Supplies.. 43
Kelly Axe Mfg. Co.—Axes..... —	Royal Remedy & Extract Co.—Sweet Wheat Chewing Gum..... 7
Kelsey & Co.—Printing Presses..... 6	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 33
Keystone Mfg. Co.—Agricultural Implements..... 26	S. E. I. Co.—Voltmeters & Ammeters... 43
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Samson Cordage Works—Cords of all kinds..... 21
Layman Pneumatic Boat and Sporting Goods Co..... 41	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Lefel, Jas. & Co.—Water Wheels and Steam Engines..... 16	Schack, W. G.—Bicycles..... 44
Lidgerwood Mfg. Co.—Hoisting Engines 35	Schamandian, D..... —
Marston & Co., J. M.—Foot and Hand Power Saws..... 35	Schollhorn Co., Wm.—Shears and Scissors..... 23
Martin & Co., W. E.—Shoe Dressing.... 45	Schrader's Son, A.—Diving Apparatus. 46
Mast, Foss & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 4	Seymour Cutlery Co., Henry—Shears and Scissors..... 42
McCammon Piano Co..... 21	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
McGarigle, Thos. E.—Rock Drills..... 46	Silver Lake Co.—Braided Cordage..... 37
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Simonds Mfg. Co.—Saws..... 35
Monarch Cycle Co.—Bicycles..... 8	Smith & Co., H. D.—Carriage Hardware. 3
Mooney & Sons, W. W.—Tanners and Curriers..... 15	Standard Hammock Mills..... 46
Morris European and American Express Co..... 45	Standard Tool Co.—Twist Drills, etc... 23
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 41	Stanley Works, The—Brackets..... 21
Myers, S. F. & Co.—Jewelry of all kinds 6	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 4
National Meter Co.—Water Meters..... 19	St. Joseph Pump Mfg. Co.—Water Elevator..... 25
National Starch Mfg. Co.—Maizena.... 29	Stieltjes & Co., F.—Importers..... 45
New Jersey Paint Works—Copper Paint, etc..... 25	Stubbs' Mercantile Agency..... 40
New Process Twist Drill Co..... 23	Sturtevant Co., B. F.—Pressure Blowers 47
New York City Peanut Roaster Works 46	Sweinhart Co., V. H.—Combination Locks..... 41
Niagara Stamping and Tool Co.—Tools and Machinery for Tinsmiths and Sheet Metal Workers..... 45	Talbot & Co., W. E.—Brick Machinery 46
Nicholson File Co.—Files..... 21	Tanite Co., The—Emery Wheels, Whetstones, etc..... 46
Norman & Evans—Steam Merry-go-rounds..... 46	Tarr, James H.—Copper Paint..... 40
Oberne & Co., Geo.—Leather Supplies.. 46	Thompson Diphtheria Cure Co..... 37
Odell Typewriter Co.—Typewriters.... 44	Thomson Meter Co.—Water Meters.... 48
Osborne & Co., C. S.—Saddle and Harness Tools..... 46	Thresher Electric Co.—Electrical Machinery..... 15
Parke & Co., John Y.—Bicycle Brake... 43	Tubular Rivet & Stud Co..... 47
Parkhurst Bros. & Co.—Elevators..... 43	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 41
Partrick & Carter Co.—Electrical Supplies..... 44	Union Sand Paper & Emery Wheel Co., 33
Pelton Water Wheel Co..... 2	U. S. Buggy & Cart Co.—Wagons and Carriages..... 42
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	U. S. Playing Card Co..... 2
Philadelphia Scoop Co..... 46	Vetter, F.—Typewriter Desks, etc..... 44
Piume & Atwood Mfg. Co.—Lamps.... 15	Waterous Engine Works Co.—Saw Mill Machinery..... 19
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 40	Weber Gas & Gasoline Engine Co..... 23
Porter, H. K.—Bolt Clippers..... 39	Weston Electrical Instrument Co.—Electrometers..... 42
	Whittemore Bros. & Co.—Shoe Dressing and Patent Leather Polish.... 15
	Wiss & Sons, J.—Shears and Scissors... 39
	Woerner Preserving Co.—Canned Goods, etc..... 42
	Woolsey Paint and Color Co., C. A.—Paints, Colors, Kalsomines, etc.... 42
	Wyckoff, Seamans & Benedict—Remington Typewriter..... 2

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to *originate trade*, and not to *execute orders*, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

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It does not employ the purchasing power of commission merchants and shippers to influence patronage.

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We make it a practice not to discuss the merits or demerits of other export trade papers. Comments on their value may be made with more propriety by those advertisers who have had experience in the use of such publications.

THE JOHN C. COCHRAN CO.

GREAT BRITAIN AS AN AMERICAN MARKET.

A COUNTRY that has for a century been a recognized master mechanic, furnishing in its manufactures standards of excellence for the world in tools, machinery, engines, implements, vehicles, steamships, etc., all of the first importance in the equipment of industry and transportation, will undoubtedly exhaust every resource at its command before receding from its vantage ground as a leader in manufacturing arts in any market in the world, and preëminently in its own home market. In view of this fact, the achievement of American manufacturers in wresting trade from their British competitors wherever they meet in markets foreign to them both is worthy of close observation, but when the American manufacturer invades the domestic markets of England and takes trade from its own workshops the achievement is one of the highest significance.

To sell tools, machinery, engines, implements and vehicles to a people familiar for a 100 years—in fact, ever since the era of modern manufacturing began with the use of mechanical appliances—has a very different meaning than sales made in non-manufacturing countries. Such a people are thoroughly accustomed to, satisfied with, and therefore prejudiced in favor of their own implements and machinery. They know how to handle them, what they can accomplish by their use, and the fact that they manufacture them is proof that they consider them to be the best that can be made. To break through this line of defence and supply implements and machinery in a market believed by its own people to be the best supplied of any market in the world by the products of their own workshops, is an undertaking very different in character and with a very different meaning to the commerce of the world, from supplying a people who have no machines nor any facilities for making them. The very conditions, however, that at first sight appear to render an entrance into England's domestic markets impossible for American manufactures are found to favor meritorious effort. The English people are not obtuse if stubborn. Their practical training in the use of machinery fits them to quickly appreciate the superior merits of an imported tool, implement or machine whenever such a one is placed in their hands for use. This faculty of appreciation of the excellence of a machine by machine users is noticeable in every market of the world where they are found. With them the merits of an article, not the place of its manufacture, decides the question of its purchase. This is why American tools and hardware are found in the windows and upon the shelves of dealers throughout all England. This accounts for the presence of American implements on all well equipped English farms and for the American-made machinery now doing service in English workshops, factories and mines. These people are educated to the use of machinery and they can appreciate the advantages of American devices and manufactures without prejudice and with the judgment always found where intelligence is highly developed.

The British market for American manufactures is not of the transient sort which may be styled sample sales. It is as permanent in the full vigor of development as the domestic trade. In some lines demand has doubled in the course of a few years. No signs of diminishing are visible. The indications are rather those of an increasing ratio. This trade is based on the economy of weight and labor, general adaptation to easy and rapid production, superior design and finish, without greater price, of American-made tools, implements and machinery. These advantages are such as a machine-using people are best fitted to recognize and appreciate. This is the secret of the success of American manufactures in British markets. Success won on these points in English markets means success in all machine-using markets of the world. The spread of intelligence, the facilities for diffusing information and the transportation of commodities is fast making one country of the world. The best and latest types of mechanical appliances are everywhere absolutely necessary to successful production in fields, forests, mines or workshops. The best informed are the most willing purchasers. When the oldest manufacturing people become large buyers of American manufactures all the world will follow their example. This is the deep significance of the success of American manufactures in British markets.

AN UNDEVELOPED METHOD FOR INCREASING INTERNATIONAL TRADE.

THE best place to exhibit goods for sale is where they are to be finally used. Any article that can be sold for delivery by mail, or any commodity that can be effectively sampled by mail, if of universal usefulness, or adapted to use in a number of countries, may be exhibited for sale where it is to be finally used with no greater expense than the necessary advertisement required to make it known, and the cost for postage. Such a sample will bring a manufacturer and his customers as near together, and facilitate an understanding between them as quickly and perfectly as it is possible to establish without actual personal contact. The enormous amount of domestic business that is done in this way in every country is small in comparison with the aggregate international trade that may be developed on similar lines with the aid of uniform postal regulations for all countries having a well-developed postal service. The only requirements are a uniform weight and size limit for packages; ruling as to what shall be accepted as mailable; rates for postal service, and a simple and inexpensive system for international money orders and registry of letters and packages.

A sample that will enable a merchant in a foreign country to see and test the commodity offered, and judge of its salability in his home market, or a manufacturer to determine the usefulness of a foreign product for his requirements, may be the means of starting a trade of great volume and importance. The expense of sending a sample by mail to any market in the world, or for a merchant to procure a sample from any manufacturer in any country, with its accompanying printed description or directions for use, is so infinitesimal in comparison with the expense of making the explanation and exhibiting the sample by personal representative, that trade relations may be so established and business conducted far beyond the limits at which the expense of personal representation becomes prohibitory. Postal regulations that will carry mailable packages wherever letters and papers may go, with equal certainty, safety and dispatch, will be one of the highest refinements of civilization for increasing international trade. Such a service will be of the first importance to great numbers of manufacturers, and a still greater multitude of importers and merchants in every country. There is now probably no way in which a government can so effectively assist its people in developing their foreign trade as by perfecting its postal service to the fullest possible extent in the direction indicated. The progress of civilization and the establishment of universal prosperity are dependent upon improvements in the art of trading and facilities for exchanging commodities. If these things were studied as universally and earnestly as the development of the art and implements of war has been and still is studied, it would be better for governments and for their people.

A NEW RECORD FOR AMERICAN-BUILT STEAMSHIPS.

SEPTEMBER 14, 1894, the New York, flying the American flag, made a record from Southampton, England, to Sandy Hook, U. S. A., of six days, seven hours and fourteen minutes, having covered a distance of 3,047 nautical miles. The New York and Paris are British built ships, bought for the American line and admitted to American registry as samples of the best English construction of the day. In consideration of the admission of these ships to American registry and a contract with the United States for carrying mails, the American line made an agreement to have built in an American yard two companion ships, not inferior in any way to those of foreign construction. The ships built under this agreement are the St. Louis and the St. Paul, both of which are now in service.

The AMERICAN EXPORTER for October, 1895, in an article on "Japanese Naval Supremacy in the Orient" referred to the fact that the St. Louis on a trial trip in the English Channel had attained a speed of 22.3 knots an hour with the use of ordinary coal. Commenting on this fact it said: "The peculiar significance of this trial is that it is the result of a first attempt. An order was given

for an ocean steamship that would comply with certain conditions in performance. The work has been done on first attempt and the conditions have been complied with, with a good margin to spare. Where else in the world has a steamship at all comparable with the St. Louis been produced as a first attempt? The second attempt, the St. Paul, sister ship of the St. Louis, is now upon the sea. No American looks forward to the record to be made by it with any feeling of misgiving."

The St. Paul was launched in September, 1895, the month before this prediction was made. June 5, 1896, it made a record from Southampton, England, to Sandy Hook, U. S. A., of six days, five hours and thirty-two minutes, having covered a distance of 3,113.7 nautical miles, making an average of 20.82 knots per hour for the whole time. The run for June 1 was 521.9 knots for the twenty-four hours. This trip lowers the record of the British-built ship New York by one hour and forty-two minutes, with a handicap of 66 knots for the longer course. This is an American record, made by an American-built ship from the Cramp's yards—hull, engines, fittings, everything American, and commanded by an American captain. A fact such as this means a transfer of ship-building orders to American yards. Whether it be for commerce or for war, competition for supremacy on the ocean will not permit any nation to be satisfied with ships inferior in any respect to the best obtainable. The best obtainable are now of American design and construction.

LONDON papers are publishing advices from Johannesburg raising a fresh outcry over the way English interests are suffering in that land of turmoil. It is alleged that the Rand is being Americanized because mining magnates have adopted American mining methods and are placing their orders for machinery in the United States instead of England. There seems to be no limit to the way English methods are predisposed to go wrong in that land of gold and disappointed English ambition.

THE TREND OF COMMERCIAL DEVELOPMENT.

THE strides in industrial expansion the world over made during the last 50 years, which cover the era of railroad and steam shipbuilding, is without a parallel in history. During this 50 years, as never before, science has striven to develop new methods for the creation of wealth. Every new avenue for the safe, quick and low priced distribution of commodities has stimulated their production, and increased production has in turn stimulated the construction of still better and cheaper means of distribution. This process has continued until it is about as feasible for a manufacturer in any country to send his commodities into any market in the world as it is to mail his circulars to importers and merchants doing business in those markets.

The present is the heir of all that science and art, mechanical construction and the practical operation of great manufacturing and transportation plants have accomplished in the past. The vast investments made in learning how to develop natural resources, how to make iron and steel, how to manufacture cotton, extract gold and silver from refractory ores, how to build, equip and operate railroads and steamships, at lowest cost, have brought all industries to a perfection not anticipated a few years ago. Moving forward from this vantage ground more can be accomplished during the next 10 years than has been achieved during the last quarter of a century. Changes in finance and in the world's general business interests will be brought about by the revolutionizing influences of the potential forces of industry and commerce now in full vigor of active expansion, induced by modern inventions, that are beyond the control of any group of men or of any nation. These changes are forcing the world's manufacturing interests to the source of cheapest production, the place where the raw material is found in the greatest abundance and the most cheaply turned into the finished product by machinery. This inevitably means that the United States is to be the greatest manufacturing nation. It now has \$6,000,000,000 invested in factories, the annual products of which are valued at \$10,-

000,000,000 in gold, employing 5,000,000 workmen who receive \$2,300,000,000 annually in wages. The purchasing power of this payroll is more than three times as great as the entire export trade of Great Britain. Add to this the fact that the railroad plant and tonnage of the United States largely exceed all of the balance of the world and some idea can be formed as to these tremendous industrial and commercial forces which cannot cease to expand and must in the natural order of development advance to the conquest of supremacy in the commerce of the world; a conquest that will create wealth wherever American tools, implements, machinery, manufactures and methods are employed in its production. This truth is being illustrated by the American silk and cotton machinery in use in China, Japan and India, the American sawmill, mining and woodworking machinery in use in South Africa; the American agricultural machinery in use in Australia, South America, Asia and England; the American tools, implements, machinery and manufactures of almost limitless variety, and for every conceivable purpose, that are finding their way into every market, the drops and rills which prophesy the flood that is to come. Such is the position of to-day. The plain teaching of these facts is that foreign importers will never be sure they are doing the best they can for themselves until they thoroughly explore the possibilities of this continent, its natural, mechanical and commercial resources.

ELECTRICAL DISTRIBUTION OF WATER POWER.

THE industrial changes that are, and are to be, wrought by the wide extension of the use of mechanical power are so stupendous it is difficult to properly depict them without passing the limits of practical experience and gaining the credit of entering the domain of romance. A clear conception of the probabilities that are near at hand may be obtained, however, by making a simple contrast between old and new conditions that are known to every intelligent person.

Water power was the first development of mechanical power that greatly relieved physical energy from the manual labor of production. Omitting reference to the rude methods by which it was first utilized and the long history of its slow development attention may at once be directed to the fact that wherever natural conditions existed for its utilization there the manufacturing plant had to be located. Belts, shafting, chain or rope drives could transmit power but a short distance. This limitation on distribution compelled the crowding of workshops and factories, like grapes closely held to the central stem, about the race from which water might be taken, causing privileges and locations to become very valuable, thus determining the location of cities and their centre of wealth.

To-day, every trip made by a trolley car proclaims the truth, by converting the power of falling water into electrical energy, that the power can be distributed over vast areas and massed for the operation of the heaviest machinery, or subdivided for the most delicate touch. This not only means an almost limitless expansion of mechanical industries, but a wonderful cheapening of all products. Released from old limitations, power is now distributed over territory many miles in extent, making it practicable to locate workshops and factories anywhere within a wide area surrounding the generating station. Investments in real estate may be much less, buildings and machinery may be better adapted for their purpose, while the only power plant required is the motor, attached to each machine, having only sufficient capacity to operate the machine under full load. Every car is supplied with its own locomotive and every machine with its own engine, as it were, making it possible to operate any one of them while others are idle or to operate all of them simultaneously, thus providing for every possible variation in requirement.

A wire, similar to trolley wire, leading from a power plant through the streets of a city, can carry sufficient energy to operate all of the machinery in every building by which it passes and many times more. There is no limit to the possible generation of power, any more than there is a practicable limit to the number of wires that may be used for its distribution. It is practically possible to

make every building in the largest city into a workshop if machines are placed in them to be operated, and to have all power required besides for other than productive purposes, such as transportation of passengers and freight, either through the streets or by elevators, the operation of ventilating fans, the creation of light and the generation of heat.

To illustrate the meaning of all this, let it be considered that energy to operate a one-horse-power motor can be supplied at an expense to the user of but \$10 per month. Counting 25 days as a month, this is at the rate of 40 cents per day, and counting one horse-power as an equivalent for eight man-power, it is seen that the energy of one man can be bought for 5 cents per day. Again, one man can superintend a machine requiring, say, 12 horse-power to operate, equal to the combined energy of 100 men.

This makes labor cost, 100 × .05.....	\$5.00
Wages for skilled mechanic, per day.....	5.00

Labor cost for 100 men at .10	10.00
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Such machines and such superintendence produce the finest and best commodities in the markets. They are not only better than those made by hand labor, but the product per man, counting the machine equal to 100 men, is greater, thus again reducing labor cost. Herein is indicated the limitless industrial potential of manufacturing by the use of mechanical, as compared with physical power, and the practical results that are sure to follow the electrical distribution of water power.

This is now being done in over 300 places in the United States. Seventy per cent. of the plants are directly connected, the water wheel or turbine and the armature of the dynamo being on a common shaft. Water powers are scattered all over the world that may be utilized in this manner, releasing men, women, children and animals from the drudgery of labor and extending markets through lowering cost and increasing earning capacity.

THE ENGLISH EMPIRE AND ENGLAND'S TRADE.

IN the name of civilization England has managed to acquire and hold under its control 11,500,000 square miles of the Earth's surface in which there is living a population of 340,000,000.

The industries and products of this vast territory, distributed as it is in every quarter of the globe, inhabited by people of every known race, is of the most diversified character and its commercial exchanges amount to an enormous aggregate. Naturally enough all the stupendous power and influence of the government is directed to bringing the benefits of this immense trade to English workmen and financiers. But for advantages accruing to trade England would not now hold governmental control over this great empire. In the language of England commerce and civilization are equivalents.

The effort made by the Hon. Joseph Chamberlain, Secretary of State for the Colonies, to ascertain the condition of trade in each colony is therefore equivalent to an attempt to discover the state of civilization developed in each. It is feared, however, that the English mind has no thought of ranking commerce with other countries as a satisfactory means of grace in reaching the best expression of civilization, but on the contrary will construe the existence of such trade as an indication of under education. In fact it has been announced that the information asked for by the Honorable Secretary is intended to show in what parts of the empire there is the greatest need for English commercial missionaries to complete the work of civilization so bravely begun. It is true there have been intimations that English manufacturers think it useless for the Honorable Secretary to undertake to find out officially what is not already known commercially about the state of English trade with the colonies. It is also true that information must be officially known before it can be officially acted upon, therefore the circular asking for the facts was necessary if further efforts are to be made to benefit the colonies with English civilization and commerce.

WHAT IS BEING LEARNED.

In other issues it has been said that what would be learned through the medium of replies to this circular would be of interest

to other countries, as well as to England, because, seeing the progress they have attained they may wish still to continue to favor English colonies with their particular brand of civilization and products. It is extremely desirable therefore that all information collected by means of this circular shall be given, without qualification, to the commercial world. This work has been entered upon and it is hoped will be continued to the end, although many of the announcements are startling to English thrift and shocking to English pride.

Sixty per cent. of the colonial trade is withheld from England, going chiefly to the United States, Germany and France. Only a few years ago England furnished the bulk of Canadian imports. Now it furnishes but 37 per cent., while the United States supplies 46 per cent. In many other of the colonies the odds against England are greater, and the average reached is 60 per cent. Rival commercial nations will see in this cause for congratulation, because they are outstripping a formidable competition and that competition the one which, to gain commercial advantages, has made itself responsible for the government and civilization of these colonies.

In view of these facts the inquiry is pertinent: Is imperial federation possible where imperial commerce is impossible? English patriotism has been made to glow many times by a rhetorical repetition of Lord Beaconsfield's incisive sentence, "Commerce follows the flag." If this be true during the infancy of the colonies, may it not be equally true when they arrive to the years of individual responsibility that *the flag will follow commerce* and that as each becomes of sufficient importance it may prefer a flag of its own to give it an independent position in the commerce of the world? This would indeed be a startling outcome to the bold, grand scheme for increasing English trade in the English empire.

A CONCESSION to build, operate and maintain a railroad between Seoul, the capital of Korea, and Chemulpo, its seaport, has been granted to an American syndicate. The Russian and Japanese representatives took much interest in the project and presumably freely consulted with their governments. There was an entire willingness that the concession should be given to the Americans.

THE PHILADELPHIA COMMERCIAL MUSEUMS.

THE Philadelphia Museums now consist of the following departments: 1st. Immense collections of raw products, the intention being to make complete collections, in time, through the whole world. 2d. A collection of manufactured products, which may aid the manufacturer in studying the competition and trade of the world. 3d. The Bureau of Information, which covers both the raw and manufactured products, for general information in all trade relations. 4th. A department for scientific investigation. Its library will later issue both scientific and commercial publications.

The Museum has now taken the important step which practically constitutes it a national institution. It is organized with an Advisory Board, consisting of many of the leading manufacturers and tradesmen from all over the United States. The first meeting of the Advisory Board has just taken place. Almost every section of the country was represented, from Tacoma in the West to Alabama in the South. All the important Boards of Trade and Chambers of Commerce of New England were represented, as well as the Middle States. In the organization of the Advisory Board, Mr. Henry W. Peabody, of Boston, was chosen president. Mr. Peabody is well known in all export circles, having been engaged in this business for a quarter of a century. Vice-presidents were chosen from New York City, Chicago and New Orleans. The Advisory Board, through the Museums, will take active measures to increase the export trade of the United States.

Immense collections from Mexico, Central and South America are on exhibition in this Museum. Fully 65 rooms are ready for inspection. There are on exhibition eight rooms of Mexican products. Six rooms are devoted to Central America. Handsome rooms, exhibiting products from Venezuela, Brazil, Uruguay and

the Argentine Republic are to be seen by any interested visitor. The collections from South and Central America, from Mexico, Australia and South Africa are not wholly complete. These countries should see to it that all their products are fully represented, as the Philadelphia Museums are now practically a Bureau for all countries, where persons interested in studying any of the products of any foreign country must come to see them. An excellent opportunity is offered each country to increase its exports of materials into the United States by making handsome exhibits of them. The Museum takes particular pains to place these different varieties of raw materials before the manufacturers of the United States who are interested in them.

All communications of trade and commerce to these Museums should be sent to The Philadelphia Museums, Philadelphia, Pa., U. S. A.

JAPANESE PRAISE FOR AMERICAN ELECTRICAL APPARATUS.

MR. HIRACON TI, a Japanese electrical engineer, who has been sent to the United States to study the practical development of electrical science, was attracted and much interested in the Electrical Exposition to which reference was made in *THE AMERICAN EXPORTER* for May. He said the Japanese flatter themselves on being considered "the Americans of the dawning day," because the same progressiveness which is noticed in the United States everywhere is also characteristic of Japan. During the last 25 years the Japanese have made wonderful advances in all kinds of industries. Railroads traverse the land north, south, east and west. Telegraph and telephone wires are to be found everywhere. Many of the cities are lighted by electricity, most of the apparatus for which, Mr. Ti states, was bought in the United States.

In concluding his observations, Mr. Ti said: "I have come to the conclusion that the electric transit system is the ideal method for Japan. I am about to make out a report to those in whose behalf I came here, and I shall not fail to render them an emphatic statement to this effect."

TESLA'S NEW ELECTRIC LIGHT.

MANY years ago, Nikola Tesla, an American inventor, undertook to solve the problem of producing light by vibrations instead of heat. The announcement is now made that he has brought his labors to a successful issue. In his laboratory there is a bulb not more than three inches in length, which becomes a ball of light when the electric current is turned on, without any perceptible heat. It is possible to read in any part of a very large room, so lighted, yet this is done without the use of films or any of the attachments necessary in existing lights. The bulb is attached to a wire connected with a street current, showing that new dynamos are not required.

The present incandescent electric lamp gives only three per cent. of illuminating power, 97 per cent. of the energy is consumed in producing the heat. The objective point of Mr. Tesla's efforts is to utilize a larger percentage of the energy in the production of light. His present bulb gives 10 per cent. of light and consumes 90 per cent. of energy in producing the vibrations that cause the light. The principle of light is vibration. The light is produced by what Mr. Tesla calls a vibrator within the bulb. It is a needle inclosed within a vacuum. This needle vibrates so rapidly that the figures per second sound imaginary, but it is this intensity of energy which gives the light its brilliancy and its apparent steadiness. The bulbs do not have to be renewed nor is there any danger of a harmful shock from them. Mr. Tesla declares that with a few more experiments he will be able to produce 40 per cent. of light, so that the waste will be reduced to only 60 per cent., or 37 per cent. less than at present.

AN EXCELLENT LIGHT FOR PHOTOGRAPHIC WORK.

Mr. Tesla has taken photographs by means of this light with an exposure of only two seconds, using a single vacuum bulb, with-

out electrodes, having a volume of about 90 cubic inches. The light given was approximately 250 candle power. The photograph was as sharp in outlines as though it were taken in full sunlight.

In studying the Roentgen ray, Mr. Tesla recently photographed the heart of one of his assistants so accurately as to note its expansions and contractions, and he has also located defects in the lungs of several persons, the presence of tubercles being very evident.

The announcement that Mr. Tesla has perfected his vibratory light, has created a genuine sensation in electrical circles. It is destined to revolutionize existing lighting systems and to vastly increase the efficiency of the plants now in use.

ACCORDING to the official records the total exports of merchandise from the United States during the month of April this year were of the value of \$69,400,503, an increase of \$5,400,000 over those of the corresponding month of last year, while the imports of foreign merchandise were \$58,643,394 in value, a decrease of over \$10,000,000 as compared with those of April 1895.

INCREASE OF PRODUCT—DECREASE OF COST—ALUMINUM.

ONE of the most remarkable illustrations of the resourceful power to increase production by an intelligent use of mechanical appliances is furnished by the statistics of the production of aluminum in the United States. The data are given as follows:

Years.	Pounds produced.
1883	83
1886	3,000
1889	47,468
1891	150,000
1893	339,629
1894	550,000
1895	850,000
1896 est.	1,800,000

This is an achievement that mere manual labor, regardless of its rate of wages, could never perform.

The successful process is largely electrical. Wonderful as its rapid development is, it is well known that it has been grievously hampered and held in check by conflicting patent claims that for a long time kept much apparatus idle. Such differences are now in an advanced state of settlement.

The increasing supply of aluminum and its decreasing cost is inducing the manufacture, out of this beautiful metal, of a large variety of exceedingly useful articles. For such articles the United States is the best source of supply.

Of Interest to Manufacturers and Shippers.

THE AMERICAN EXPORTER'S "Guide to the Export Trade of New York" is now in press. It contains a list of the general export merchants handling goods for account of foreign buyers arranged in the consecutive order of their street numbers, a list of the steamship lines running from New York to foreign ports, in the alphabetical order of such ports, and besides the foreign Consulates of New York and the leading foreign express, freight and forwarding agents.

It will be printed on strong linen paper, bound in Russia leather and of such size as will admit of its being carried in a vest pocket. Price \$2 net. Address publishers of *THE AMERICAN EXPORTER*.

THE *Daily Chronicle*, London, pays tribute to the universal interest in bicycles and bicycling by starting a regular cyclists' department in its columns. In its first article it lays stress on the superiority of American models over English ones and warns British makers that unless they reduce the weight of their machines, which are seven pounds heavier than the best American types, and adopt the American saddle and other improvements they will lose the home market itself in competition with the Americans.

JOHN M. B. SILL, United States Minister to Corea, has reported to the State Department at Washington that a concession to build, operate and maintain a railroad between Seoul, the capital, and Chemulpo, its seaport, has been granted James R. Morse for an American syndicate. Mr. Sill says the Japanese Government put no difficulties in the way of the scheme, and through its foreign office indicated to Mr. Morse's friends its willingness that the concession should fall to an American syndicate. The Russian Minister at Seoul took much interest in the project, and presumably freely consulted with his Government. He suggested some changes in the contract favorable to Corea, but acceptable to Mr. Morse and his syndicate, and then gave them valuable help and encouragement in the negotiations.

American Goods for Japan.

(From our Special London Correspondent.)

LONDON, June 1, 1896.

ENGLAND, in common with America, has been deluged with articles warning British exporters that their trade with Japan is doomed; that the Japs are simply going to cut us all out of their country—commercially speaking, of course—and that the coming race which is to dominate the world is the Japanese themselves. So far as the United States are concerned the article on this subject in the March issue of THE AMERICAN EXPORTER did much to smash this utterly erroneous idea, and our own merchants here are beginning to think that business may still be done with that country. As it was well stated in your article "the sovereignty of trade rests with those who possess the widest range of natural resources and the highest degree of inventive genius and productive skill. * * * American enterprise in Japan is becoming aggressive. The excellence and superiority of American products are gradually making an indelible impress on the Japanese mind and so winning their way to public favor." Those words do not seem to indicate any idea of retreat on the part of American manufacturers in competing for Japanese trade.

I am inclined to think that all this talk about Japanese progress is a great deal exaggerated. I notice that the French Consul-General at Yokohama, in his last report, says that there were no inventions or improvements worthy of the name in the machine pavilion at the Kioto Exhibition, and a German official report from the same country says that many imported machines are put together by the Japs, and they then sell them as of Japanese manufacture. These facts tend to throw rather a different light on the matter.

But I am more concerned with the question of selling American manufactures in Japan. The United States are by far the best customers of Japanese goods, taking \$4,000,000 worth in 1894, or, roughly speaking, nearly 50 per cent. of the total. The United Kingdom only purchased \$2,975,000 worth. During the same period England sent \$4,000,000 worth of her goods to Japan, against \$5,000,000 of American. The principal products wanted in Japan are raw cotton, machinery and metal goods, sugar, bread stuffs, iron and steel, oil, etc.

In view of the enormous trade done by Japan with America the exporters of the United States should certainly sell more to that country. The British Consul at Tokio has just stated, in a dispatch to the London Foreign Office, that unless tempted by lower prices Japanese buyers will continue to prefer the American market, since they are strongly attached to the people of the United States by sentimental reasons and by the further consideration that they are by far Japan's best customers for all the great staples of her export trade. Canada does very little with Japan, although the Dominion has the advantage of a direct line of steamers, only sending \$3,714 worth of goods in 1895. Indeed, Canada offers nothing that is not already better supplied in the United States.

What are the goods, then, that the American manufacturers may hope to sell well in Japan? As this journal circulates extensively in that country and will, therefore, be read by business people in the principal industrial centres there, I may say that the chief hope of the American manufacturer lies in hardware, machinery, metals, furniture, shoe wear, etc. Curiously enough, there is little or no ice machinery in Yokohama, although the consumption of ice in that city is great. Here Japanese buyers could not do better than get estimates from American makers who are adepts in this line.

Cycles are coming into fashion there, but the Japs cannot make presentable machines, those now made there weighing at least 40 pounds. If the native riders could see the elegant machines turned out of the American factories they would not want to continue the use of their own inferior steeds. In locomotives the United States have become serious competitors with foreign importers and will doubtless obtain the lion's share of the trade eventually, the American locomotive being much liked in Japan. The native buyers have shown their appreciation of American cigarette machinery by placing extensive orders in the States. Electric machinery, too, is supplied in increasingly large quantities by America, and the bulk of this trade is in the hands of United States makers. The lamps made in Japan are of an inferior kind, and I think if the people of that country knew how much handsomer and better those of American design and production are they would not remain content with their own rough imitations. Of course the electric light is extensively used, but artistic lamps will continue to sell well there.

If Japanese manufacturers want to compete successfully either with native producers or with foreigners they must purchase the best plant and the most superior machinery of all kinds to effect that purpose. Mere hand labor is, of course, very cheap in that country, but manual labor cannot compete with machinery for exactness nor for beauty, when manufacturing processes are concerned. I am not dealing with articles of *virtu* in this letter, but with the every day requirements of the masses, and such things can only be turned out by the means of well-organized plants. This it is that enables the United States manufacturers to compete successfully with England both in her home market and also abroad. And yet higher wages are generally paid in America than in England. The difference is in the plant and in the method of organizing labor. If Japanese manufacturers want to be equally successful they must adopt similar tactics. Let them build up native manufactures, but to do so under the fire of European and American imports they must have the best appliances. The Japanese farmer cannot always go on plowing, reaping and sowing, as he did 500 years ago. Ninety per cent. of the Japs won't always be content to go about barefooted. They won't always be content to cut every bit of timber by hand. Already foreign shoes are imported there. When the Japanese farmer sees American agricultural tools he will abandon his antediluvian methods, and the woodcutters will buy more machinery from the States. I may add that in the one planing mill in Japar, in Yokohama, the woodworking machinery is from Boston, Mass., U. S. A.

Trade with China Increasing.

MR. CHARLES DENBY, United States Minister to Peking, has furnished the State Department at Washington interesting information relating to the commerce of that country following the close of its late war with Japan.

"The close of the war," says Mr. Denby, "was looked forward to by foreigners as the date from which China was to depart from her traditional policy as to internal improvement and development. While the views of the most enthusiastic have not been realized and China has shown a cautious conservatism, there has been no want of progress. Some railroads have been built, but as to the general problem of railroad construction, the Chinese Government stands committed to the policy of using Chinese money only." Mr. Denby thinks, however, that this policy will not avail for lines of any great extent, and he predicts that China will resort eventually to the aid of the foreign syndicates.

The railroad development of China has attracted the attention of American financiers and builders of rolling stock and equipment. Many agents of American firms are now in that country awaiting the adoption of some definite plan by the Imperial Government. At least two combinations of American capitalists represented there by agents are prepared to build and equip from beginning to end any railroad system which China may desire.

Mr. Denby adds that the high standard of excellence recently attained by Americans in the production of ships, armor and guns will doubtless enable them by adopting the policy of continued representation followed by European firms to secure a share of this business. He also warns Americans contemplating the establishment of manufactories in China that the unrestricted right of foreigners to manufacture in that country is so fraught with momentous consequences to foreign interests that the failure of Japan to secure immunity from taxation for the product of her mills in China would excite little sympathy in manufacturing communities abroad, and he thinks, therefore, that dangers still confront foreign establishments in China which no foreign Government would find to its interest to remove.

In conclusion, Mr. Denby says: "It is safe to say that it will be many years before native manufactured articles will drive foreign goods out of the market. The silver question cuts both ways. The merchant in China buys for silver and sells in Europe and America for gold; thus he largely gains. On the other hand, he buys in foreign countries for gold and sells in China for silver. Prices for manufactured goods are necessarily raised, but the volume of trade continues to increase. Universal bimetalism would be welcomed by many foreign merchants residing in China, though the sentiment is by no means universal. It is safe to say that scarcely one favors 'free silver' for his own country alone."

America the Peacemaker.

THE battleship Oregon which broke the world's record for speed for that style of vessel, performed the feat, it is said, easily. She made 16.78 knots an hour, carrying 160 pounds of steam, while the revolutions were from 128 to 130 per minute less than the Government allowance, showing that she can do even better if required. This news was very gratifying to the American people, for it showed that the money which they have cheerfully devoted to the building of the vessel has not been wasted, especially as it is understood to come up to the requirements in its defensive and offensive features in other respects. It is vitally important that the great battleships of our navy should be as speedy as possible, for upon their ability to overtake an enemy, and sometimes get away from a superior force, may depend the entire question of their being of any real value. The fact that the Oregon has in this point of speed surpassed all other similar vessels will attract increased attention to our new navy, not only at home, but abroad, and will be attended with important results.

Within the past few days the American-made armor for a Russian battleship has stood the test and been accepted by the representative of the Czar, while American-made projectiles are steadily making their way into favorable notice abroad. The United States is not a warlike nation, and its influence is strong upon the side of universal peace. It is said that the best way to preserve peace is to make warfare so dangerous that the nations will hesitate to engage in it. By producing the most effective ships and guns and projectiles therefore the Americans will not only be increasing their reputation abroad, but also be hastening the day when war shall be no more.—*Pittsburg Times*.

A WRITER who is travelling through England says the very worst things he has seen in that country are the shoes—boots they call them—that men and women wear. They are all clumsy and unshapely, from the little things that one sees the babies wear, each with an adult heel under it, to injure the child for life, up to the very best men's and women's shoes in the West End. They are not only heavy and unshapely, but the fashion appears to make them all too short, in consequence of which the English walk is a vile one, suggesting that the people are more or less crippled. The cheaper machine-made American shoes are coming into the market in great numbers, and the evident superiority of their shape leads shoe dealers all over the metropolis to advertise American shoes. Even when Americans take old shoes to the best shops to be used as patterns the result is not successful.—*Cincinnati Enquirer*.

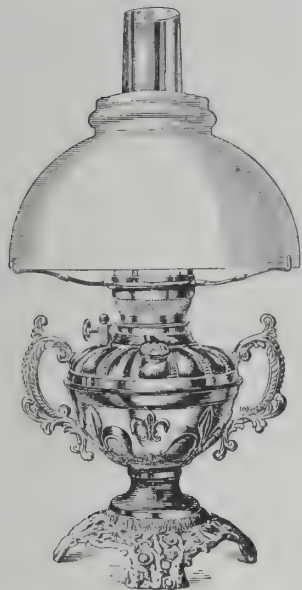
THE progress made in American railroading is shown in the time made by the "Black Diamond Express," the new flyer recently put on the Lehigh Valley. This train ran from New York to Buffalo, 448 miles, in nine hours. Better time could have been made, but the train was on a 10-hour schedule and could not be let out. The Allegheny Mountains were climbed at a 60-mile-an-hour gait, while on the road's level bed as high as 70 miles an hour was made.

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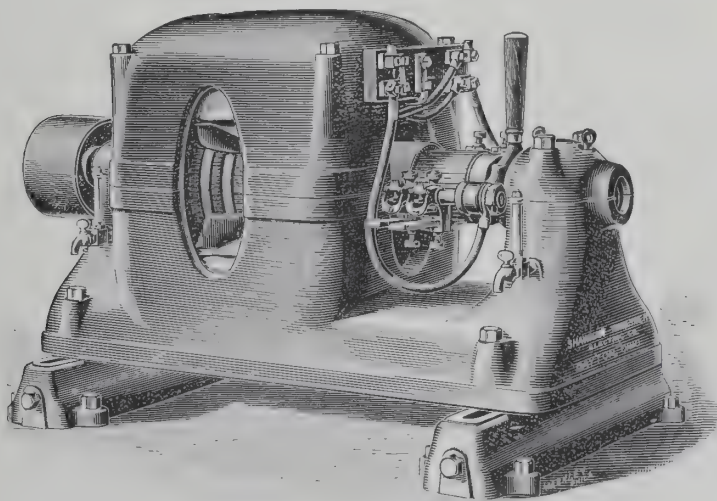
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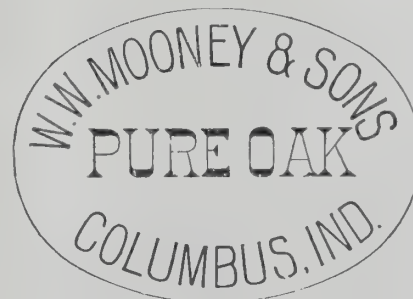
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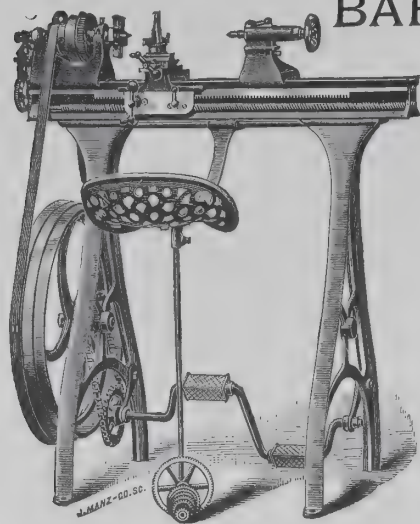
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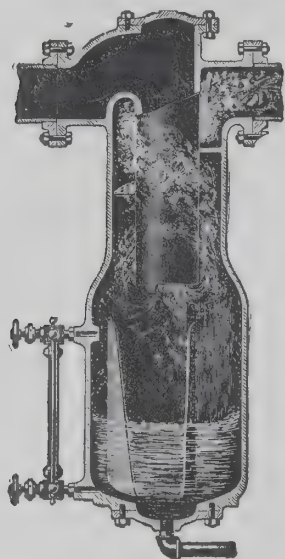
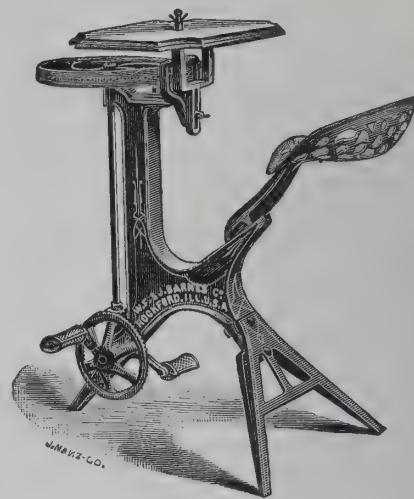
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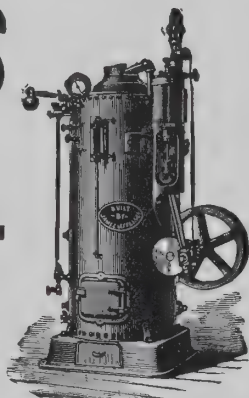
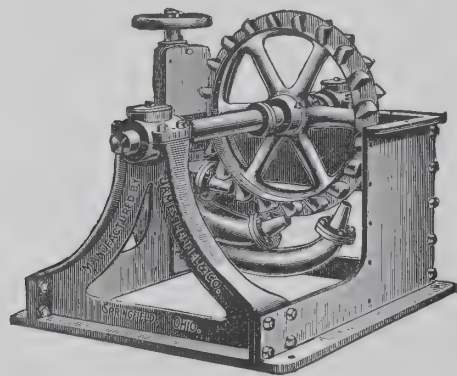
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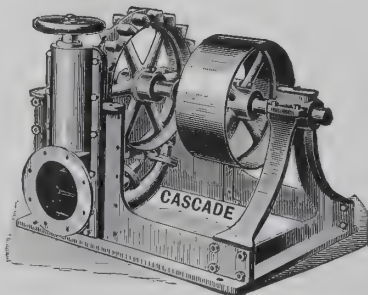
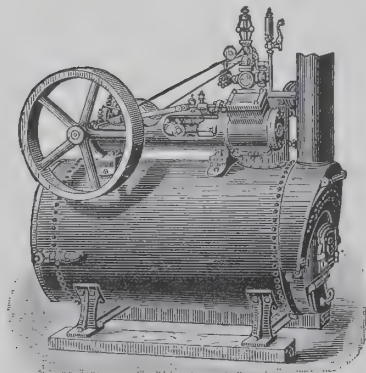
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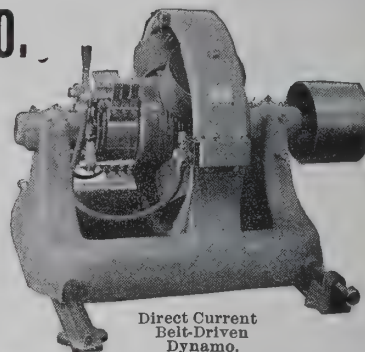
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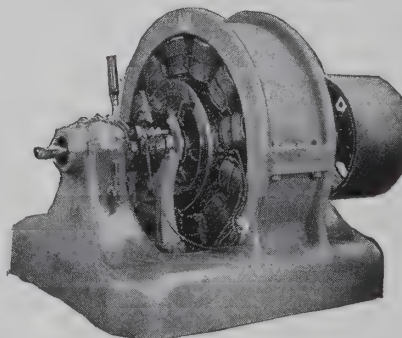
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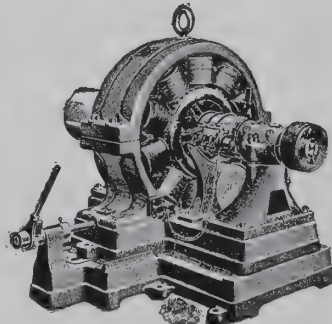
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DEVOTED TO THE FOREIGN TRADE IN MACHINERY AND HARDWARE.

Low Cost of American Machinery.

IT will no doubt seem strange to many that a machine, the labor cost of which is probably considerably more than nine-tenths of its total cost, should be built within about two miles of this office, in Brooklyn, for considerably less than the same machine could possibly be built for in Germany, the reputed home and source of cheap labor.

Yet this seems to be the case with the Mergenthaler linotype machine. The company which builds it has a factory in Brooklyn, and until recently had an interest in a factory in Germany, where identically the same machine was built, and largely by the same fixtures, tools and system of manufacture. Labor in the German factory was about 40 per cent. cheaper than in Brooklyn, but the Brooklyn factory produced the machines at a lower cost in dollars and cents; our authority for the statement being the president of the company.

The firm of Henry R. Worthington is said to have become satisfied that the smaller and medium sized pumps can be manufactured at lower cost in its Brooklyn factory shops than in England, where its larger pumping engines for European trade are built, on account, chiefly, of relatively higher cost of material in large pumps and difficulties of transportation.

It is said that the Singer Manufacturing Company manufactures sewing machines in its Elizabethport (N. J.) factory at lower cost than in its Glasgow factory; and Mr. Mandon, the French engineer who recently visited this country, told us of several instances in which exact duplicates of well-known American tools had been made in Paris, but could not be sold there as cheaply as the genuine American tools could be, notwithstanding excessive cost of carriage and the French import duty. One of the machines thus specified by him was the Gisholt tool grinder.

Other proof is not wanting that at least some American machine shops turn out work at lower cost than the same work can be made for in any other country. For the present, at least, we forbear discussion of the reason for this, and simply state the facts as proof of our oft-expressed opinion that, within reason, the highest paid labor is cheapest when employed in machine construction — *American Machinist*.

American Soap Machinery.

THE following remarks are taken from the *Oil and Colorman's Journal* of London, England: There can be no doubt about the rapid strides which the makers of American and French soap machinery have made during the last few years. Copies of the illustrated books of soap machinery now and again reach us from the United States and France, and we have looked through these catalogues with some amazement at the position which the making of this machinery has reached in those respective countries. Scientific soap manufacturing is the order of the day, and certainly the French machinists in particular have accomplished results which are creditable to them, and should be stimulating to our English soap machinists. It appears to us that a larger number of labor-saving machines are in use in the soap trade in the United States than is the case in this country. We wish that some of our English soap manufacturers could see for themselves the works of some of the French and American soapmakers. In some departments we have not much to learn, but there are other sections where very useful lessons might be taken to heart.

American Skill Abroad.

THE manufacture of Wheeler-Sterling projectiles is to be begun in France and Great Britain to overcome a prejudice of those nations against the importation of military supplies. Both countries admit the superior quality of the Pittsburg shells, but neither Government is willing to buy them when made in this country. The result is the decision of the Wheeler Company to establish factories abroad.

This is good policy on the part of the foreign governments, no doubt, for in the event that either of them should become involved in a war with the United States, it might be embarrassing to have their projectile factory located here. On the other hand, in the event of such a war, it may be somewhat embarrassing to this country to have its own superior inventions used against its navy. Fortunately for American enterprise and industry, the Russians are not so particular about the source of their armor-plate supply, and the Japanese are not ready to close their ports against American military manufactures.

Compressed Air as a Power.

LORD'S *Power Magazine*, referring to the use of compressed air in place of steam in several departments of the Pullman Palace Car Works, near Chicago, says:

"The argument advanced at Pullman recently in favor of a change from steam to compressed air was, in short, great saving in manual labor, economy, ability to transmit power long distances without loss of force, simplicity, safety and convenience.

"The introduction of compressed air means the doing away with the great iron wheels which revolve near the ceiling in all the shops. The belts which run from these wheels to the work benches, and sometimes pick up a workman to his hurt and damage, will soon be things of the past. To take their place a pipe will run along each wall just back of the benches.

"In front of each workman a small tube will connect with the pipe and with whatever bit of machinery he has to do. When the workman wishes to shut off his machine he simply has to close a stopcock. To start the machine he reverses the operation. Under the steam system the belt has to be slipped to one side, but it goes on running ceaselessly and noisily. With the air system it is claimed that the speed of the machine in use may be graded, something that is impossible when a belt is used.

"Compressed air is already in use at Pullman for lifting purposes, for the testing of air brakes and for the cleaning of carpets and upholstery. The lifting of enormous weights is accomplished by compressed air at a great distance from the source of power. It is claimed that if the same lifting was done by steam at the same distance from the source of supply a much greater initial energy would be needed, steam losing its power greatly by condensation in its transmittal. Fully 30 per cent. of the steam power at Pullman is taken up by belting. This loss it is claimed will be saved by the compressed air system. Add to the 30 per cent. loss to the belts the amount lost in transmission, and the economy of force is evident in the use of compressed air. The same authority says: Compressed air has an advantage over electricity in that it is not dangerous and because it cannot start fires. In riveting, in breaking stay bolts and in general boiler work the use of compressed air saves one-half of the manual labor necessary under other systems. It is probable that the sandpapering of cars will be added to the uses of compressed air. One machine will do the work of six men. It is thus described: A disk to which the sandpaper is attached is fixed on the end of the air motor's shaft. The supply hose is on the right of the operator, while to the left is a large duck hose extending almost to the floor. This carries off the dust. The floor is kept damp, and the greater part of the dust adheres to it. The maximum air pressure on the piston just balances the weight of the machine, and it can be raised or lowered with little effort on the part of the operator. Ten engines are used to supply steam for the running of the machinery in the different departments at Pullman. The engines are so placed that the work which each has to do is in its immediate neighborhood. With compressed air as a motive power, says an officer of the company, probably not more than one centrally located large engine would be necessary, as the air loses so little of its force when being transmitted to a distance. As there is something essentially simple about the method of producing the power nearly all the steam appliances can be converted and made to do service in the new way of working. The change, therefore, is said to be one of little expense, and this, combined with the great expected saving in labor and running expenses, was the most convincing reason to the Pullman engineers and directors why the change should be made in part of the works as an experiment.

Heavy Machinery Orders for Russia.

THROUGH the efforts of E. D. Smith, of E. D. Smith & Co., of Philadelphia, the Russian-American Manufacturing Company have arranged to build for the Sormovo Company a complete establishment for the construction of locomotives. The works are to have a capacity of 200 locomotives per annum, and will be located at Nijni Novgorod, about 400 miles southeast of Moscow. Already orders for about \$500,000 worth of tools and machinery have been placed, in which the following firms participate: Bement, Miles & Co.; Wm. Sellers & Co., Incorporated; Pedrick & Ayer Machine Company; E. Harrington, Son & Co.; Pencoyd Iron Works and Wilbraham Bros., all of Philadelphia; Hills & Jones and the Betts Machine Company, of Wilmington, Del., also secured orders for their specialties.

Cast Iron Wheels in Europe.

OF all the European countries Austria is the only one where the use of cast-iron wheels for railroad purposes is not now prohibited by law, and where, consequently, their manufacture has not been entirely killed. Those laws originated at a time when the make-up of such wheels was far from the present state of perfection as manufactured in the United States.

The general use of these wheels in the United States simply gave to the manufacturers an opportunity of improving their methods, to inventors an impulse to furnish new and better ones, and to capitalists an opportunity to invest in this trade, so that the manufacture of cast-iron wheels is to-day one of the most prosperous lines of railway supply in the United States, and the outcome is that there are more cast-iron wheels manufactured in the United States in one day than in all Europe in one year.

That cast-iron wheels are, nevertheless, well liked wherever they are used is proven by the fact that the Austrian Government, during the past year, asked its representative in the United States, Mr. Fr. von Emperger, consulting engineer, 71 Broadway, New York, to make an investigation of the American practice. As a result of this investigation the Austrian Government railways placed an order with the New York Car Wheel Works, Buffalo, N. Y., for 120 car wheels (system P. H. Griffin) of the standard size, for the purpose of using them on freight cars with brakes. The lot has been delivered, but cannot be used elsewhere than within the Austrian boundaries. The reason of this limitation is a rule of the German Railway Union Code, which comprises all Central Europe, or at least all the States neighboring Austria. This rule prohibits the use of brakes with cast-iron wheels, and the interchange of cast-iron wheels is therefore impossible except within the Austrian boundaries, where the railway system comprises some 6,000 miles.

If by these trials and with reference to the American practice the European officials can be induced to abolish the above-mentioned rule of the German Railway Union Code there would be a bright prospect for the export of cast iron wheels to Europe, as the necessary experience and skilled labor as well as the requisite machinery cannot be had anywhere in Europe. This trade would, of course, be limited to Austria for the present, so far as railways are concerned, and to street railway equipment.

Mr. von Emperger has gone to Vienna, Austria, to take charge of his continental office there, and it is thought he will give the matter his attention in the future.—*American Manufacturer.*

Machine-Made Goods for Farriers.

MACHINE-MADE horsenails, a few years ago, were looked upon with contempt by the experienced farrier. Now hand-made nails may yet be looked at as curiosities. Time seems to be altogether on the side of machinery, and horseshoes seem likely to follow the same course of history as the nails used to fix them on the hoofs. For more than 30 years horseshoes have been made on a commercial scale, but this was chiefly in the United States where, we understand, the old-fashioned hand made shoe is now very rarely seen. In the course of time the machinery has naturally been greatly improved, and apparently farriers in different parts of the world are learning to appreciate the advantages of a machine made shoe, and one company that manufactures them finds itself called upon to produce shoes of the greatest imaginable variety of size, shape and weight, no less than 60 patterns being required for the African market alone. In the range of patterns manufactured it seems that nearly every variety of hoof is provided for, and veterinary surgeons assert that it is only a very exceptional foot indeed that machine-made shoes cannot be applied to. The superiority of machine work is shown in the usual ways, in better finish, and greater uniformity in size, shape and weight. When shoes are made by hand it is obviously impossible to insure that the shoes on the corresponding feet would be exactly the same weight, a matter which would inevitably produce variation in the horse's gait, with numerous resulting disadvantages. With machine-made shoes this can hardly happen. In Australia machine made shoes do not seem yet to have made much advance, but time will tell.—*Australasian Ironmonger.*

To Send More Iron to Europe.

THE Tennessee Coal, Iron and Railroad Company has closed a contract for 500 tons of pig iron with a foundry company in Genoa, Italy. This is said to be only a starter for business in the Mediterranean, for negotiations are pending with an Italian steel company for the delivery for a term of years of 50,000 tons a year of the output of the Alice Furnace here, which is turning out a fine low silicon iron adapted to steel making.

The iron heretofore used by the Italian Steel Plant has been purchased of the English furnaces. The Sloss Iron and Steel Company and Tennessee Company have established agencies across the ocean, and expect to make a large number of contracts.

UNITED States Consul Lewis Baker, Managua, Nicaragua, reports that H. E. Low, at present acting as American Vice-Consul at that port, struck the idea that he could run certain machinery on his farm in the mountains by wind power. He ordered a windmill from Chicago, and attached to it his hulling and other machinery necessary for cleaning coffee. When all connections had been properly made, the result was far beyond his most sanguine expectations. This successful termination to his experiment will doubtless lead to a large number of orders in the near future for American windmills.

Steel Shafting.

TO buyers who are not well informed, one shafting is as good as another and the price is the only thing they consider. Others consider quality as well as price, and when several manufacturers claim they make the best how are such buyers to decide between them? They cannot unless they have tried each kind or have been properly informed in regard to the difference.

It is generally known that turned shafting, when properly made, is desirable, as there is no lamination of the surface of the metal, nor is it subjected to internal strains that cause crystallization and liability to fracture.

Taking it for granted that turned shafting is the best, is there any difference between one manufacture and another of this class of shafting? Any first-class mechanic knows that owing to the difference in the metal itself, the wear of tools, etc., it is almost impossible to turn a shaft perfectly round or parallel, and if he uses a file to make it true he does not succeed. When a perfect surface is required it is necessary to grind it, and this is what makes the difference between shafting made by different manufacturers.

The advantages of turned and ground shafting are as follows: First, being perfectly round and straight, it can be run at a very high speed without vibration and heating the journals; second, being highly polished, it is more attractive in appearance, while the surface, being free from lamination, makes it very desirable for piston rods, etc.; third, having no internal strains due to the process of manufacture, it is very desirable where strength is required, preventing accidents, loss of time, money and lives; fourth, being true to size, the couplings, gearings, etc., can be fitted at less cost. The Cumberland Iron and Steel Shafting Company, whose advertisement may be found on another page, claimed to own all the patents on special machinery used in shaft turning, grinding and straightening, and from them foreign buyers may obtain full particulars.

Mining with a Steamboat.

THE Snake River mining boat Leota has commenced operations on the gold-lined bars of the Snake. The Lewistown *Tribune* says: "The water is pumped from the river by two large pumps. One is a centrifugal that throws water through a 15 inch pipe for sluicing. A cylinder force pump forces the water through an eight-inch pipe to the giant, which tears down the bank and forces by hydraulic pressure 1,000 yards of sand and gravel into the sluice boxes every 24 hours. The main sluice box is 24 inches wide, and its bottom is covered with steel plate and steel riffles. From the main sluice box are six undercurrents which lead off into six riffle tables; from these the sand passes into smaller boxes over brussels and blankets on to burlap tables, where the slime and black sand are separated from the sand. The tables and smaller sluice boxes are treated four times every 24 hours by the blankets, brussels and burlaps, being thoroughly washed, and the fine gold, slime and black sands going through a chemical process preparing it for amalgamation. It is then put through an amalgamator and is made ready for the market.

"Sixteen men are now employed and operations are carried on day and night. The few days that they have been running have served to get the machinery working nicely, and from now on there will be no interruption in the work. A clean up has not yet been made, but they are confident of getting satisfactory results. When this fact is established water will be brought from the Alpowa Creek to work this bar, and the Leota will be moved to some other bar where a similar test will be made, and so on until the vast bars along the Snake and Clearwater that have heretofore paid but moderate will be made to yield their precious gold on the wholesale plan."

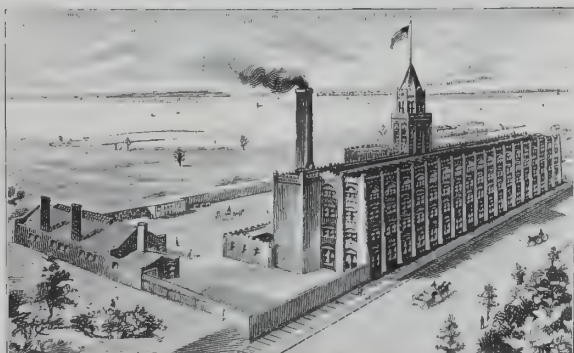
Making Continuous Rails.

SUCCESS seems to attend the production of continuous rails for railway tracks, with the simple use of a portable foundry cupola, mounted on wheels, so as to enable it to be drawn off easily by a pair of horses. In St. Louis the method is pursued of uniting the rail ends by merely running a casting of iron around the joint by means of a special kind of molds, and the molds are heaped up near the line of the track, and a fire built around them, so that by the time they are to be put around the joints they are a dull red; there is also a lining in each pair of molds, which requires renewal after each 20 joints, but its composition has not yet been made public, nor the exact mixture of metals used for the cupola. The iron is poured into the molds from a ladle, as in ordinary practice, and the union between the iron and the steel of the rails is represented as similar to that which takes place in a good weld. After the iron has been poured the molds are allowed to remain about 10 minutes before taken off and used at a second joint; every other section of a track is cast in the morning, and in the afternoon the remaining joints are made, this being done to prevent, as far as possible, the severe strain of contraction and expansion, for when the joint is hot it heats the rails for some distance on each side, and consequently there is considerable expansion.

MR. SHERIDAN P. READ, United States Consul at Tien Tsin, China, in making a report on the construction of the first railway in that country, mentions a Grant locomotive, Oregon pine and Janney couplers as details of the equipment. The rails used are Sandberg grade, rolled at Barrow, England, and were delivered at about \$21 a ton. The Carnegie shipment made to Japan in March is said to have been at lower rates than this, and as the Illinois Steel Company is now busy on a Japanese order for steel rails, 500 tons of which were shipped to New York via Buffalo from the Bay View Mills at Milwaukee recently, it is evident the product of our mills is in higher favor, or that United States mills have found a way to successfully meet European competitors.

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The Meters made by this Company for all kinds of service have stood this test for many years and have proved their superiority over all others. Over **166,000** in use. The largest and most complete line of Water Meters in the World.

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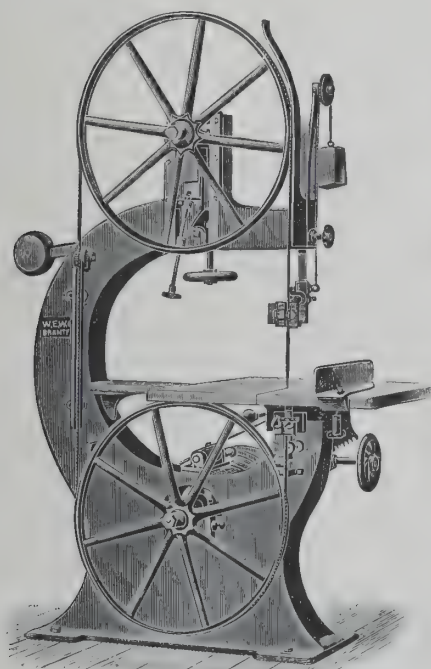
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[JUNE, 1896.]

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No. 3.—36-inch Wheel. Weight, 2,000 lbs.

BAND RE-SAWS.

No. 5 Band Resaw.—48-inch wheels; saws 24 inches wide, 5 to 40 feet per minute. Resaw swings clear of machine when required. Weight, 4,500 lbs.

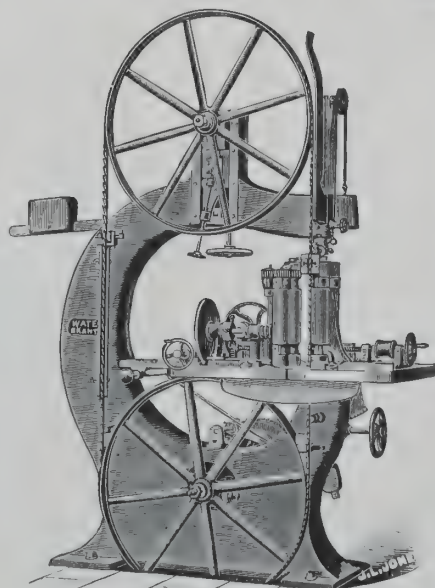
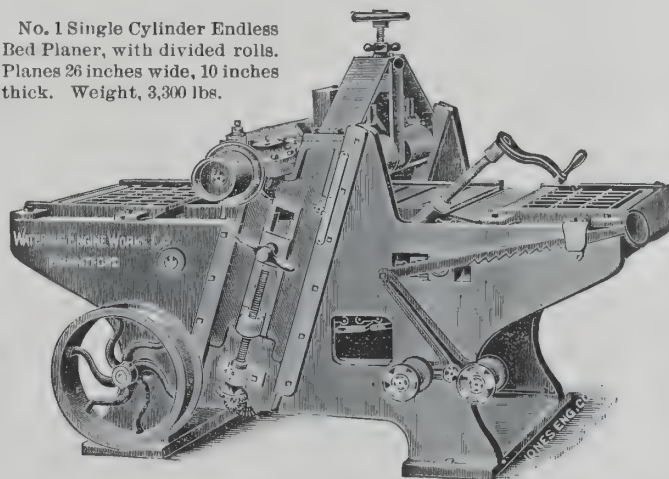
No. 6 Band Resaw.—48-inch wheels; takes saws to 3 inches; cuts 30 inches deep. Weight, 4,300 lbs.

No. 7 Band Resaw.—54-inch wheels; 4-inch saws; cuts 30 inches deep and to center of 10 inches. Weight, 5,300 lbs.

OTHER SIZES MANUFACTURED.

FULL LINE OF
Saw Mill Machinery.

No. 1 Single Cylinder Endless Bed Planer, with divided rolls. Planes 26 inches wide, 10 inches thick. Weight, 3,300 lbs.



No. 4.—40-inch Wheels and Removable Resaw. Weight, 2,750 lbs.

Wood-Working MACHINERY.

No. 1 E. B. Planer. Weight, 3,300 lbs.; like cut.
No. 1 Double Cylinder E. B. Planer. Weight, 5,300 lbs.
No. 2 E. B. Planer. Weight, 2,600 lbs.
"Champion" Combined Planer, Matcher and Moulder.
Planes 24 inches wide up to 6 inches thick. Best all-around machine.

MANY OTHER STYLES AND SIZES,
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Long experience in the export trade is
a satisfactory guarantee.



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PREMISES.

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January, 1896, we moved into new premises, securing unsurpassed facilities for executing contracts promptly and satisfactorily.
Order direct or through your commission house, sending us copy of order.

Saw Mill Machinery Our Specialty.

There are some 300 of our saw mills running in South and Central America, Europe, Asia and Africa, of different sizes, from those cutting logs 6 feet in diameter to small mills sufficiently portable for mule-back transport.

WATEROUS, BRANTFORD,
CANADA.

Commercial Supremacy of the United States.

JULIAN R. ELKINS, in the *American Magazine of Civics* for May, asserts that "the United States is again to be the commercial mistress of the high seas." This may seem to be a broad statement, he admits, but nevertheless it is true. All signs of the times point to the fulfillment of this prophecy. Mr. Elkins reviews the present trade conditions as follows:

"While our trade with South America is on the increase, other countries are beginning to look to us as the greatest manufacturing country and are turning their trade to us. Japan has a high reverence for the true American and all his ways, and she is to-day granting the United States more rights and privileges in her country than any other nation or country has ever enjoyed in Japan. The trade of the United States with Japan now amounts to millions of dollars, and bids fair to steadily increase until Japan will do all her trading with us. Australia, although under the rule of Britain, has a commerce or trade with the United States which amounts to millions of dollars annually. France has had very heavy duties upon American goods, raw and manufactured, but she, too, has come to the conclusion that we can manufacture a higher grade of goods than is possible in any other country, so she intends to lessen the duties to such an extent that the manufacturers of the United States can put their goods into her country, and if she does this it will increase our trade and commerce to a still greater extent. Russia, the best friend that the United States has to day, despite the blood, marriage and monetary relations existing between England and us, is granting our people and our manufactured goods more prestige each year. Russia is even now buying the armor plate for her navy from us, and this alone means a great deal to us, as the iron and steel industry is a very large factor in our trade. Almost all of the small islands of the Atlantic and Pacific, which are in close proximity to the United States, do their trading with us. If the Government should purchase Cuba from Spain (which she should do) another great avenue of trade will be opened up. The United States should own Cuba and the rest of the West India Islands and the Sandwich Islands. These islands are rich in mineral and other resources, and on account of their geographical position should belong to the United States. * * *

"Foreign countries have tried to keep pace with us in the different manufacturing lines, but, failing in this, two countries, England and Germany, recognizing the superiority of our goods and knowing that they could not sell their goods if they were put up besides ours, have resorted to underhand means and deception in keeping up their trade with those countries favoring American-made goods. It has been discovered that these two countries have been stealing our trademarks on various goods and putting them on goods made by themselves, and in this way they have made the people think they were getting American goods.

"The example set by Venezuela will, in the course of time, be followed by other South American countries, which will mean advantages to them of far more value than could possibly be attained by commercial alliance between them and hostile foreign powers, which are in alliance with South America purely and simply for the dollars there is in the alliance, and not for any good which they could do for South America. An alliance between the United States and South and Central America will be of far more value to the United States than a casual observation of the question will show. Besides having a commercial value amounting to millions of dollars annually, it would have a political value to the three Americas of more magnitude than is at first apparent."

In conclusion he remarks:

"One thing that we should see to is the establishment of a fine line to ply between our principal seaports and those of all the different countries of Central and South America, so that our passengers, our freights and our mails will not have to go by way of English ports and English vessels, as is now the case, but will be carried direct from this country to Central and South America in American vessels. We can build as fine and good vessels as any nation on the globe, and instead of paying millions of dollars to foreign powers to do our commerce carrying, let our Government help build steamers to do this work and put this money into American pockets, and then go out after the trade which belongs and should come to us. The millions and millions of dollars paid by South America to the countries across the waters should in virtue come to us, but we have a part to perform before this will be done, as well as South America. Yankee brains and Yankee hustle are securing a strong foothold in South America, and are doing a world of good for that country in developing the resources and in the upbuilding of the country.

"South America needs and should be in close touch with the United States. She is rich in resources of all kinds, and she needs the enterprising Yankee to help her to develop her greatness to a greater extent than he is doing to day.

"Let all Americans who are true to the very core of their heart to this great and grand country of ours stand by the doctrine laid down to us by one who had the true spirit of Americanism—Monroe—and exercise a lawful protectorship over the weaker South American countries, looking to that great and grand union of North and South America when we can say to the grasping powers from over the seas, 'America for Americans.'"

—A scrubbing machine, patented April 28 by Janette Cowgill, of Ottawa, Kans., exhibits mechanical ingenuity of a wide range. It consists of a tank with a faucet to discharge water onto the floor. Underneath the tank are geared revolving brushes operated by a cogwheel affixed to the side of the tank. There is also an endless chain of sponges or wipers which are geared to run through the tank and out onto the floor in the rear of the machine, whereby the scrubbing and drying are effected in one operation. *

Another Advance in Exports.

THE foreign demand for American manufactured goods is greater this year than ever before. The following table of exports in some special lines for the month of April, 1896, as compared with those for the same month last year, makes a showing that must be highly gratifying to all who are interested in the development of the foreign trade of the United States:

	April, 1895.	April, 1896.
Art works.....	\$35,029	\$46,905
Blacking.....	39,356	58,424
Brass and manufactures of.....	46,441	94,112
Brooms and brushes.....	8,157	19,466
Candles.....	21,766	27,396
Carriages and street cars.....	96,127	173,375
Patent medicines.....	192,122	235,552
Clocks and parts of.....	62,734	89,655
Watches and parts of.....	35,281	43,159
Glass and glassware.....	80,621	93,511
Glue.....	8,365	14,065
Grease and soap stock.....	77,401	145,136
Scientific Instruments and apparatus.....	210,300	253,012
Cutlery.....	10,589	19,143
Builders' hardware.....	206,271	400,271
Saws and tools.....	163,638	216,226
Machinery.....	909,885	1,459,894
Locomotive engines.....	106,082	329,088
Stationary engines.....	17,534	26,708
Boilers and parts of engines.....	25,645	58,727
Printing presses and parts of.....	8,346	26,159
Scales and balances.....	27,546	32,164
Sewing machines and parts of.....	282,012	306,783
Lamps and chandeliers.....	40,317	59,061
Boots and shoes.....	105,953	137,619
Harness and saddles.....	17,265	20,846
Lime and cement.....	10,323	16,873
Organs.....	35,613	77,008
Pianofortes.....	11,368	30,923
Other musical instruments.....	26,465	42,953
Paints and colors.....	59,295	85,467
Paper and manufactures of.....	186,309	230,330
Perfumery and cosmetics.....	24,721	28,715
Plated ware.....	24,365	27,466
Butter.....	76,472	108,193
Toilet or fancy soap.....	11,440	16,751
Starch.....	33,079	109,000
Stationery, except of paper.....	67,247	74,368
Varnish.....	23,957	32,738
Doors, sash and blinds.....	15,970	33,590
Household furniture.....	272,741	339,159
Carpets.....	17,412	30,084

Exports of all kinds of merchandise, April, 1896...\$69,400,503

Exports of all kinds of merchandise, April, 1895... 63,958,041

Total increase for April, 1896, over April, 1895... \$5,442,462

The increase in the exports of machinery is the most remarkable.

American Inventions Appreciated Abroad.

INVENTORS will have their ambition excited by the recent sale, by the Diamond Match Company, of Chicago, of patented match-making machinery and rights to the European Government. That company received \$800,000 from the French Government and \$800,000 from the Italian Government, and it is reported that they will receive similar sums from Germany, Austria-Hungary and other countries. Five years ago the science of converting logs into matches was said to be a finished science, incapable of further improvement, but American ingenuity has shown that what was "perfect work" in 1891 will not answer for 1896. Even now the machines used in making matches, wonderful though they are, are not to be left unchallenged, as inventors are working on new ones whose capacity will, it is claimed, far excel that of the best machines now in operation. It is a bold or a very ignorant person who in these days will assert that any process, tool, machine or device is incapable of further improvement. There may be, there are many absolute failures in the works of the inventors, but it is an open truth that there are many satisfactory successes also, and that through the labors of these ingenious persons everything in the shape of machines is gradually coming to a higher plane. Make room for the inventors.—*Lumber World*.

JAPAN is about to order four first-class battle ships, and if the Diet approves, as it is likely to do, at least two of these will be ordered from United States builders. Most Japanese naval officers and constructors were educated in England and so have British prejudices, but the liberal Japan Government, largely through friendship, intends to give American war ships a trial. In a report just issued American manufacturers of general merchandise are urged to go to Japan and study Oriental tastes and needs as the English and French do. Japanese manufacturers are themselves making rapid strides, says the report, but there is a splendid opportunity for Americans to go there and start factories, owing to the greater taste shown by American workmen and exceptional ability to adapt themselves to changed conditions. American locomotives are crowding out those from all other countries.

—The American wheel is from five to seven pounds lighter than the English affair, and it is cutting into the British bicycle manufacturers quite materially. The *London Chronicle* warns them that they must overhaul their product, and make a lighter wheel.

35% MORE BUSINESS IN 1895
THAN EVER BEFORE.

DO YOU WANT A
BETTER RECOMMENDATION?

IF SO,
TRY OUR FILES.
THEY ARE THE BEST.

ALL KINDS OF FILES AND RASPS FOR ALL KINDS OF WORK.

NICHOLSON FILE CO.

PROVIDENCE, R. I., U. S. A.

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450 ILLUSTRATIONS.

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RECEIVES SPECIAL
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SOLID BRAIDED CORDAGE.

Sash Cord,
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MANUFACTURERS OF

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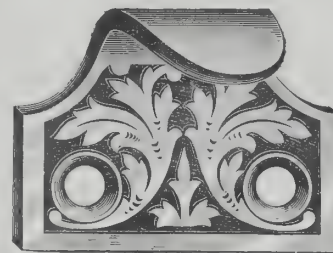
WROUGHT STEEL SASH LIFTS.

Several Different Styles.

Light!

Strong!

Handsome!



Light!

Strong!

Handsome!

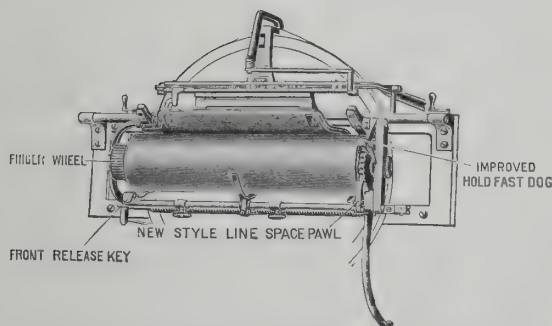
Send for price list illustrating these and a great variety of
steel butts, etc.

THE STANLEY WORKS, NEW BRITAIN, CONN., U. S. A.
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If you take pains to learn the experience of users of the

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You Will Use No Other.



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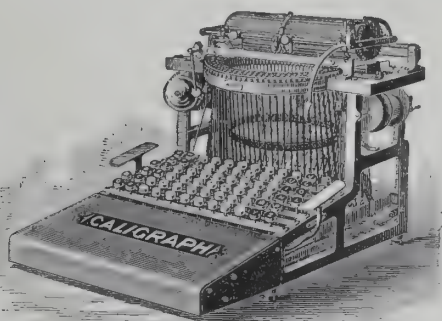
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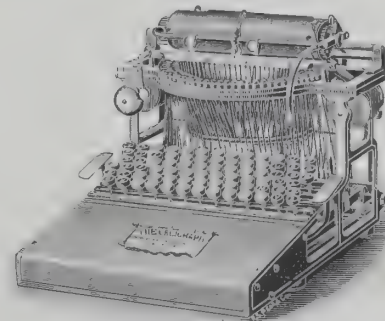
Contains eight testimonial letters.
These sum up the experience of
thousands of users.



View of Hinged Ribbon Supports,
No. 4 Caligraph.



No. 4 Caligraph (78 Characters), with Office Case, \$97.50.



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\$85.00.

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American Firearms Superior.

AT the rifle examination and test made by the New York State Board of Arms on the Creedmore range, near the city of New York, May 9th, the Savage repeating rifle made the best record for rapidity and accuracy in firing. Mr. Savage fired 10 shots in 15 seconds with his rifle, working it alternately as a repeater and as a breech-loader. This was the highest record for rapidity of firing in a series of tests. It is claimed that the gun embodies the best features of several well-known systems and combines simplicity, strength, lightness and ease of manipulation. They are made to use metallic ammunition charged with smokeless powder in its full strength. The many positive advantages of smokeless powder are so obvious that it is unnecessary to urge its utility with sportsmen. A few of its merits are the absence of smoke, long range and flat trajectory, high velocity, great penetration, non-fouling of the barrel, less recoil and lighter weight. The point blank range of the Savage rifle with smokeless powder ammunition is 200 yards for accurate shooting and 250 yards for practical hunting.

The "stopping" power of the small metal-jacketed bullets driven by smokeless powder is far more deadly in effect than that of the larger calibre lead bullets driven by black powder. This is due to the extraordinarily high velocity of the bullet. There is no animal that is sufficiently large to prevent the ball from passing entirely through its body when fired at within ordinary sporting range.

The Savage rifle is said to be the first hammerless magazine sporting rifle ever built to use smokeless powder.

Another gun that made a record for itself was the Baker gun. This, fired at 100 yards, made five successive bull's eyes and 24 points out of a possible 25.

The Putnam and the Burton guns made excellent records. At 300 yards in 5 shots the Putnam scored 22 out of a possible 25; at 500 yards in 15 shots 62 out of a possible 75, and at 800 yards 52; at 1,000 yards in 5 shots 15 out of a possible 25. In the endurance test of the Blake and Burton guns 400 shots were fired in rapid succession; the Blake and Burton both passed all right.

The *Eagle*, commenting upon the subject of this exhibition and competition of modern firearms, says: "The tests of the various rifles in competition have demonstrated that with a gun weighing less than nine pounds a good marksman can hit a target less than two feet in diameter half a mile away three times out of four. He can also at ranges varying from 100 to 200 yards, hit with 25 shots a minute any object larger than two feet square.

"This puts an end to the old fashioned charge in solid ranks across an open field upon an enemy's fortified position. Military men say that the battles of the next war between modern armies will be a succession of contests between skirmish lines.

"Military men are striving to day to combine simplicity and effectiveness in the manufacture of small arms. The man in battle is usually so excited that if there is any wrong way of loading and firing he will be sure to strike it. As far back as the middle of the eighteenth century Frederick the Great made the remark: 'Anything not simple is useless in war.'

"The modern magazine rifle, with its rapid-firing mechanism and throwing a bullet with an initial velocity of 2,400 feet a second, to a distance of four miles, piercing at short range through 40 inches of solid oak plank, is a destructive weapon, but it is yet on probation. There are many able military men who assert that it cannot hold its own in a sharply contested battle with the old-fashioned breech-loading rifle of 10 or 20 years ago. Said Major J. B. Burbank of the United States Army, while at Creedmoor this week:

"There is considerable doubt as to the value of long range small calibre guns. In the Chinese and Japanese war the Japanese used modern high-power rifles with 301-1,000 calibre bullets and the soldiers found them less destructive to the enemy than those throwing the 45-100 bullet. One Chinaman walked 100 yards to a hospital after six bullets had gone through him. It was found in the late war with the Arabs and Abyssinians that the shock and damage to the men were much less with the modern weapon than with the larger rifle of former days.

"The Prussians had a smaller body of men than the French in each battle of the Franco-Prussian war and yet the needle gun, with its reputed 600-yard range, proved more effective than the famous Chassepot rifle used by the French with its 800 to 1,000 yard range. Our old Springfield breech-loader has been fired 40 times in a minute and would be likely to be as effective as any rapid-firing magazine gun if the soldier became confused in battle.

"The theory of modern European nations is that if one adopts a rapid firing long-range gun the other must keep step and adopt an improvement along the same line.

"The United States have adopted what is known as the United States magazine rifle, calibre .30, a rotary bolt gun, adapted from the Krag-Jorgensen rifle. It is made at Springfield in the most thorough manner. Before making a choice the Government tried all the guns adopted by England, France, Germany, Holland, Spain, Italy, Russia, Belgium, Denmark, Norway, Japan, Austria and Switzerland. Each of these countries had held exhaustive trials before adopting its own weapon. Besides this the Government Board tried 40 guns of private invention before deciding upon the present arm as the best to be had.

"After all," continued Major Burbank, "the result of a war depends as much upon the quality of the men as anything else. Good nerve force and training will tell more in future wars than any style of weapon. Instead of an inanimate target you have a live man to fire at in battle, a man pointing at you, trying to kill you. The drill and the mental, moral and physical perfection of the men composing the armies will decide the war more than mere numbers or the style of weapon. I have been enough in battle to see the full force of this statement."

Greece a Market for American Goods.

THE present business relations between the United States and Greece are very insignificant, and it is a much-to-be-regretted fact that American manufacturers have totally overlooked that country, leaving it to the British and German manufacturers, who are at all times in advance of Americans when it comes to the subject of pushing the markets for their manufactured goods.

The annual importations from Great Britain of steam and gas engines, pumping plants, milling machinery, machine tools, printing and lithographic machinery, cotton and wool spinning and preparing machinery, are valued at not less than \$350,000, and Germany follows a very close second.

While American manufacturers of machine tools are leaving this market practically unnoticed, German manufacturers are imitating us as closely as possible in design, though they cannot compare in quality, and are placing these goods on the Grecian markets as "American."

The only drawback is the difficulty in arranging terms of payment, and the total absence of agents or representatives of American firms to push sales. The terms in vogue among British manufacturers are one-third cash with order, balance on arrival of goods against bills of lading, through their agents, and to good firms four months' credit. The terms granted by German manufacturers are one-fifth cash; balance by three, six, nine and twelve months' acceptances, payable in Greece.

There should be a large importation from the United States in the following lines, viz.: hardware, locks, lock furniture and ironmongery goods, while, as a matter of fact, there are really none at all, the trade lying wholly with Germany and Great Britain, and is valued at over \$1,000,000 per annum.

Rapid Printing Ticker.

PROBABLY there is no other place in the world where seconds of time count as they do in Wall street, New York. Besides having regular daily papers devoted to financial and commercial news exclusively, the street has also several news services which furnish to subscribers items affecting securities the moment they become known to the managers. The items of news are sent out on small printed or written slips by messenger boys.

A sharp rivalry exists between the news bureaus to see which shall first serve their patrons. It takes several minutes to set up the type, print the slips and deliver them, and a new company which believes this is a waste of time is soon to furnish lightning reports. That is, as soon as a piece of news is known in the company's office it will immediately be known in the offices of all its subscribers.

An electric printing machine has been perfected which works with the speed of the fastest typewriter. It is in the form of a little box which may be placed anywhere in an office, and is connected with the company's office by wire. An operator there, sitting at the keyboard, tops off the news, and it appears simultaneously on a page of paper which issues from the boxes in the various bankers' and brokers' offices.

American "Bikes" Going Abroad.

A LARGE foreign demand is springing up for American bicycles. The estimated number for the season's export is placed by conservative estimates at 100,000. American wheels are gaining in popularity in foreign markets, and it is becoming now the proper caper to have an "American." The demand is at present above the supply, manufacturers say, but the sense in which this is true should be understood. Leading concerns have more orders than they hope to execute fully this season. In the sense that a customer cannot find a bicycle in a bicycle store if he wants to buy one, it is not true. The guesses as to this year's output vary all the way from 750,000 to 1,250,000. A good many houses, having sold all the wheels they can make, have "pulled in" their travelling men. Tubing costs a little more than last year, and the total cost of wheels is a little more. This year tubing is scarce. Next year there will be enough to go around without delay.

Perambulating Fumigators.

TWO machines designed for the use of the United States Marine Hospital are mounted on wheels and are intended to be used in exterminating epidemic diseases in cities. One consists of a chamber in which infected clothing and other articles can be thoroughly penetrated with hot steam, while the other is a sulphur fumigator, provided with all the apparatus for disinfecting houses, the fumes being driven into the building through rubber hose connected with a reservoir on top of the machine. The idea is to send these machines post haste to any house in which contagious or infectious disease breaks out.

THE J. A. Fay & Egan Company, Cincinnati, report that in the face of the strongest European competition they have received a large order for tools for locomotive and railway car shops in Russia. This order, which amounts to over \$10,000, is highly gratifying to the manufacturers, as it is the second one received within the past few years. This shows the high esteem in which the wood-working machinery manufactured by this company is held and the high reputation which it has gained for them in foreign markets.

—It is reported that the Tanite Company, Stroudsburg, Pa., U. S. A., is filling a large order for emery wheels for Finland, and that they have also received a valuable order from the Japanese Government.

Puritan Highest Grade Bicycles.

UNEQUALLED AND UNAPPROACHED IN
DESIGN, MATERIAL AND CONSTRUCTION.

Most Popular Wheel for Export.

LIGHT. STRONG. FAST.

Send for Illustrated Catalogue "E." Established 1850.

O. J. FAXON & COMPANY,

BOSTON, MASS., U. S. A.

MANUFACTURERS.



Johnston's Standard Kalsomine and Fresco Paints,

Ready for Use!

FOR WALLS AND CEILINGS.

Absolutely Reliable!

GOLD MEDAL, NEW ORLEANS, 1884-5.

EIGHT FIRST-CLASS AWARDS.

Cheaper than Wall Paper or Oil Paint.

Pure White and Beautiful Tints. Will not rub or scale from the wall. Invaluable in cleansing and disinfecting walls impregnated with germs of disease. Mixed in five minutes ready for the brush, by the addition of water only. Five pounds will cover with a good body 500 square feet on hard-finished walls. Send for sample card and prices to

DRY KALSOMINE AND FRESCO PAINT WORKS, 25 & 27 John Street, Brooklyn, N. Y., U. S. A.

Orders filled through commission houses. Correspondence solicited. Catalogue "J" on application.

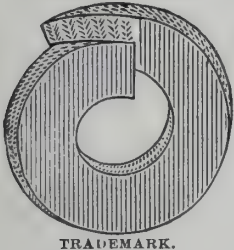
Twist Drills made by this Company are **HOT FORGED** by an Entirely New Process.



They are **TOUGHER** and **STRONGER** than the **OLD STYLE** Milled Drills.

Bit Stock Drills,
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1/2 inch " "
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Etc.

Catalogues sent **free**
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GOULD'S STEAM AND WATER PACKING.

Patented June 1, 1890.—The Original Ring Packing.

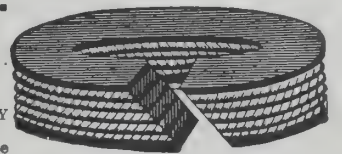
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM.
SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE GOULD PACKING COMPANY, EAST CAMBRIDGE, MASS.

ORIGINAL RING PACKING.

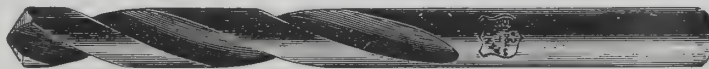


ALBION CHIPMAN, Treas.

The STANDARD TOOL COMPANY, Cleveland, Ohio, U. S. A.

MANUFACTURERS OF

Increase Twist Drills.



CATALOGUES SENT FREE ON APPLICATION.

Bit Stock Drills for Metal or Wood, Taper and Straight Shank Drills, Reamers, Sockets, Chucks and extra length drills for Electrical work.



'96 JENKINS '96 is the Perfection of Joint Packing.

INSTANTANEOUS, DOES NOT SQUEEZE OUT

and not necessary to follow up joint. We guarantee it to last for years on any and all pressures of steam, or any kind of joint where packing is required. **DOES NOT ROT, BURN, OR BLOW OUT, therefore the BEST FOR ALL PURPOSES.**

Call for and insist on having **'96 Jenkins '96** stamped like cut.

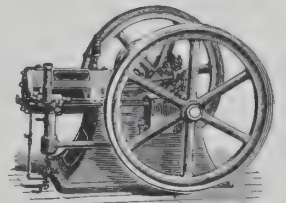
JENKINS BROS., 71 John St., New York, U. S. A.

WEBER GASOLINE ENGINE

for use in any place or for any purpose requiring power.

Only a few minutes' attention required each day. Guaranteed cost of operation is one-tenth of a gallon of 74° Gasoline, or 17 cubic feet gas per horse power per hour. The simplest, most economical and best power. No engineer required; no coal; no fire; no danger. Sizes, 2 to 50 horse power. (Special attention paid to secure packing in heavy cases for export). Goods delivered New York, San Francisco or New Orleans. Cable Address, "Webergas," Kansas City. State size wanted.

WEBER GAS & GASOLINE ENGINE CO., 425 S. W. Blvd., Kansas City, Mo., U. S. A.



Bernard's Patent Paragon Plier, Manufactured by The Wm. Schollhorn Co.,

9 inches long.



THE BOSS TOOL FOR BUILDING WIRE FENCES.

NEW HAVEN, CONN., U. S. A.

This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

Manufacturers of the Celebrated "Star Brand" Shears and Scissors, and "Elm City" Shears in large variety.

BEST QUALITY ONLY.

Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

Machinery Notes.

—It is estimated that in the United States \$60,000,000 are invested in the manufacture of bicycles and \$200,000,000 are invested in the bicycles owned by riders.

—Sargent & Company, New York, recently received an export order for 2,400 dozen can openers. They accepted and shipped 1,800 dozen of them, which at the time represented the stock of this particular kind on hand.

—Seven years ago a dynamo of 80 horse-power was a wonder, but to day dynamos of 2,000 horse-power are not exceptional, and electric locomotive engines of 100 tons' weight are demanded.

—A shipment of 500 tons of light steel rails was recently made to Japan from the Milwaukee works of the Illinois Steel Company. The rails were sent by lake to Buffalo, there transferred to cars for New York, and then loaded on a steamer for Japan.

—The Harrisburg Foundry and Machine Works, Harrisburg, Pa., U. S. A., will shortly make a shipment of one of their engines to Pretoria, South Africa. This is, however, not the first shipment to that point, as they have considerable trade in that territory.

—An electrical road for rural freight traffic is being constructed from St. Louis to Morse's Mill, 35 miles distant. Along the route there are now nine postoffices, six flour mills and 26 stores or factories that transport their produce and purchases by wagon.

—The Diamond Machine Company, of Providence, R. I., U. S. A., have shipped a large order of grinding machinery to the Japanese Government. The order was received through their London agent, and includes, besides other things, 10 large size water tool grinders.

—The Congress of Honduras has passed an act granting a concession to New York capitalists for the building of an inter-oceanic railroad from Puerto Cortes to Amapala. Before carrying out their concessions the company have to consolidate the foreign debt and make an arrangement with the holders of the former concession for the same road.

—The self-healing pneumatic tire is being offered to the trade by S. F. Myers & Co., Nos. 48 and 50 Maiden lane, New York. The composition which lines the tire is made so as to maintain an equable consistency under all conditions, and if a puncture occurs the pressure on the wheel forces the composition into the opening and closes it permanently.

—The zinc mining industry at Mossy Creek, Tenn., is growing in importance. The new find is said to be the richest and most valuable zinc ore in the world. The Judge Jarnigan farm is being dotted with pits and shafts and the yield of ore is paying big dividends and swelling the pockets of the stockholders in the company and furnishing employment to hundreds of laborers.

—The G. & H. Barnett Company, of Philadelphia, Pa., U. S. A., have completed an important extension to their file works, which gives them largely increased facilities. The works of the company are running full time, and with orders on hand and in sight they say it looks as though it would require their full capacity to meet the demand during the Summer and Fall months.

—An interesting demonstration of the excellent quality of tin plates made from American Bessemer steel sheets and their adaptability for stamping purposes was made recently at a New York factory, when, out of 1,202 blanks, no less than 1,181 were drawn down into perfect 4-quart deep pans, a smaller percentage of waste than has been usual with imported Siemens plates. The material used was the Alba bright plate made by the Pittsburg Tin Plate Works, New Kensington, Pa.

—It cannot but be a source of gratification to all Americans to observe the steady, growing demand for the products of American factories by the foreign countries that have heretofore looked to other sources for supplies. The Union Steam Pump Company, of Battle Creek, Mich., report a cash order received from Mexico amounting to \$11,000. Similar instances are heard on all sides, and the time is coming when this country will take the place of England as the manufacturing centre of the world.

THE Niagara Stamping and Tool Company, Buffalo, N. Y., U. S. A., manufacturers of tinsmiths' tools, have placed on the market the "Buffalo" snips, which combine the advantages of circle snips with straight snips. They are very strong and as well adapted for regular work as straight snips. They are made in two sizes for three and one-half and three-inch cut, and are forged from a solid bar with steel-laid jaws, properly tempered.

THE W. F. & John Barnes Company, of Rockford, Ill., have just issued attractive catalogues of their metal and wood working machinery. They make a specialty of foot-power lathes and their catalogue shows an interesting line of the latest designs which are sure to interest engineers. The catalogue of wood-working machinery shows the various forms into which wood can be cut and turned by the devices which they furnish. They are sent free on application and are well worth sending for.

THE very finest wire made in this country comes from a wire manufactory at Taunton, Mass. This metal cobweb of minute diameter is exactly the $\frac{1}{1000}$ part of an inch in thickness—much finer than human hair. Ordinary wire, even though of small diameter, is drawn through holes in steel plates, but on account of the wear such plates cannot be used in making the hair wire. The Taunton factory mentioned uses drilled diamonds for that purpose. These queer diamond dies are made by a woman of New York City.

ELECTRICITY.

Electrical Development.

VERY interesting statistics dealing with the commercial progress of electricity during the last few years were given in the opening address of C. H. Wilmerding, president of the National Electric Light Association, at the convention held recently in New York. While the first central station was only established about 17 years ago, there are at present 2,500 electric light companies in the United States and about 200 municipal plants. The central stations represent an invested capital of \$300,000,000. In addition, there are about 7,500 isolated plants, which have expended \$200,000,000 more. An idea of the capacity of these 10,000 installations may be formed when it is known that there are produced daily for their use from 50,000 to 75,000 incandescent lamps; that the annual consumption of carbons in arc lamps is 200,000,000, and that 500,000 electric motors are operated by the current which they generate.

The electric railway is of still more recent birth, dating back but 10 years, and yet at the present time there are no less than 900 such roads in this country, using 11,000 miles of track, operating 25,000 cars and involving an investment of about \$750,000,000; and this investment is increasing annually at the rate of \$100,000,000 for new roads and new equipment. While these are large figures they do not at all represent the total capital employed in electrical industries. The manufacturers of the apparatus and supplies used to carry on this enormous business, and the dealers who handle them have at stake probably a sum sufficient to build and equip all the central station plants in the country; and if the auxiliary enterprises, such as those of the producers of copper, the makers of boilers, the engine and car builders, fixture manufacturers, glass workers and a score of others, who depend in a large degree, and in some cases exclusively, upon the electrical trade, are considered, the grand total would reach a sum that any country might be proud of as a national debt.

This astounding growth affords a striking example of American enterprise as compared with that of the Old World. Against 900 electrical railways in this country, there are less than 100 in all Europe; and as to electric lighting, the output of a single company in New York or of a single company in Chicago, is greater than the combined output of all the stations in the brilliant city of Paris.

Telegraphs and Telephones.

CHAUNCEY M. DEPEW, in the course of an address delivered at the Electrical Exposition in New York City, gave some interesting statistics showing the development of the telegraph and telephone. "Thirty years ago," he said, "there were 75,000 miles of wire in the United States; to-day there are 1,000,000 miles. Thirty years ago 5,000,000 messages were annually transmitted by telegraph; now there are 60,000,000. In a quarter of a century the receipts of the telegraph companies have increased from \$7,000,000 to \$25,000,000 per year. Since the opening of the telegraph the imports and exports of the United States have grown from \$220,000,000 to \$1,600,000,000, while the internal commerce of the country has grown from about \$1,000,000,000 to the fabulous figure of \$25,000,000,000 a year. In 20 years the use of the telephone has become such a necessity in our daily life that the mileage of the telephonic wires has increased to 600,000 miles and the number of telephones to 700,000. Nothing more distinctly illustrates the truth of the charge that the Americans are a talking people than the statistics of this wonderful instrument, for during the last year there were had over the telephone wires of the United States alone 670,000,000 conversations, and yet the telephone is only partially developed."

From Brazil.

YOUNGSTOWN skill, Youngstown enterprise and Youngstown capital have again triumphed, and the product of Youngstown labor finds a market in another section of the world, this time the product going to South America and the lucky firm being the Orient Electric Company, whose plant is located in the power house of the Youngstown Street Railway Company, Youngstown, Ohio, U. S. A.

The company has been corresponding for some time with parties in Brazil, and recently an order was received for 500 lamps, the order coming from Jacarchy, Est. do San Paulo, Brazil. Accompanying the order was a draft on the London and Brazilian bank for the purchase amount of the order.

The order will be filled at once and the Orient company feel that in this start they are opening up a profitable territory for their goods, and that a good business will result in the future. The company have just cause to feel elated over their success, and they expect to go still farther into foreign markets with their goods.

What with cotton ties to India, electric supplies and wash metal to England and Brazil with others yet to hear from, "the biggest little city in the world" will soon have a world-wide reputation.—*Youngstown Vindicator*.

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For the rapid cure of Diseases of the Throat and Lungs.

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For purifying the Blood and the cure of Scrofulous Diseases.

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Warranted to cure all Malarial Disorders.

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For Restoring gray hair to its Original Vitality and Color.

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Prepared by Dr. J. C. AYER & Co., Lowell, Mass., U. S. A. Dealers liberally supplied with almanacs, show cards, and other advertising material.

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BOOTS AND SHOES.

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FOR USE IN

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Mills,
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CHOLERA! CHOLERA! CHOLERA!

Do you want to prevent it? If so, then secure at once one of

THE PERFECTION WATER ELEVATOR

AND PURIFYING PUMP,

A Sure Preventive and THE PUMP FOR YOU.

The Celebrated "Perfection" Water Elevator and Purifying Pump

Is the only Bucket Pump on earth where the chain or buckets are made of strictly one piece of Black Open Hearth Steel and free from soldering, being folded by double lap seams and the entire product galvanized after construction, which is not the case with any others on the market to-day. The storage of water in cisterns and open wells is the method largely adopted throughout this country for drinking, cooking and bathing purposes.

HOW DOES IT PURIFY THE WATER?

Every bucket descends full of air and ascends full of water. For every gallon of water drawn a gallon of air (the vital element) is circulated through the water from the bottom to the top. This not only thoroughly agitates, ventilates and purifies the water, but it forces a large surplus of oxygen from the air into the water, and this surplus of oxygen is sufficient to consume all impurities or organic matter in the foulest water. It is an admitted fact by thousands using them that this purifier is the only pump that will destroy wigglers, water bugs and water lice, and make foul or stagnant well or cistern water pure and sweet, removing all color, bad taste and smell. After a few days' use the old flatness and insipidity is replaced by a sparkle like that of a mountain spring. In short, it will make bad water good and good water better.

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So our testimonials say.

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A perfect substitute for pitch

NEW JERSEY PAINT WORKS

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

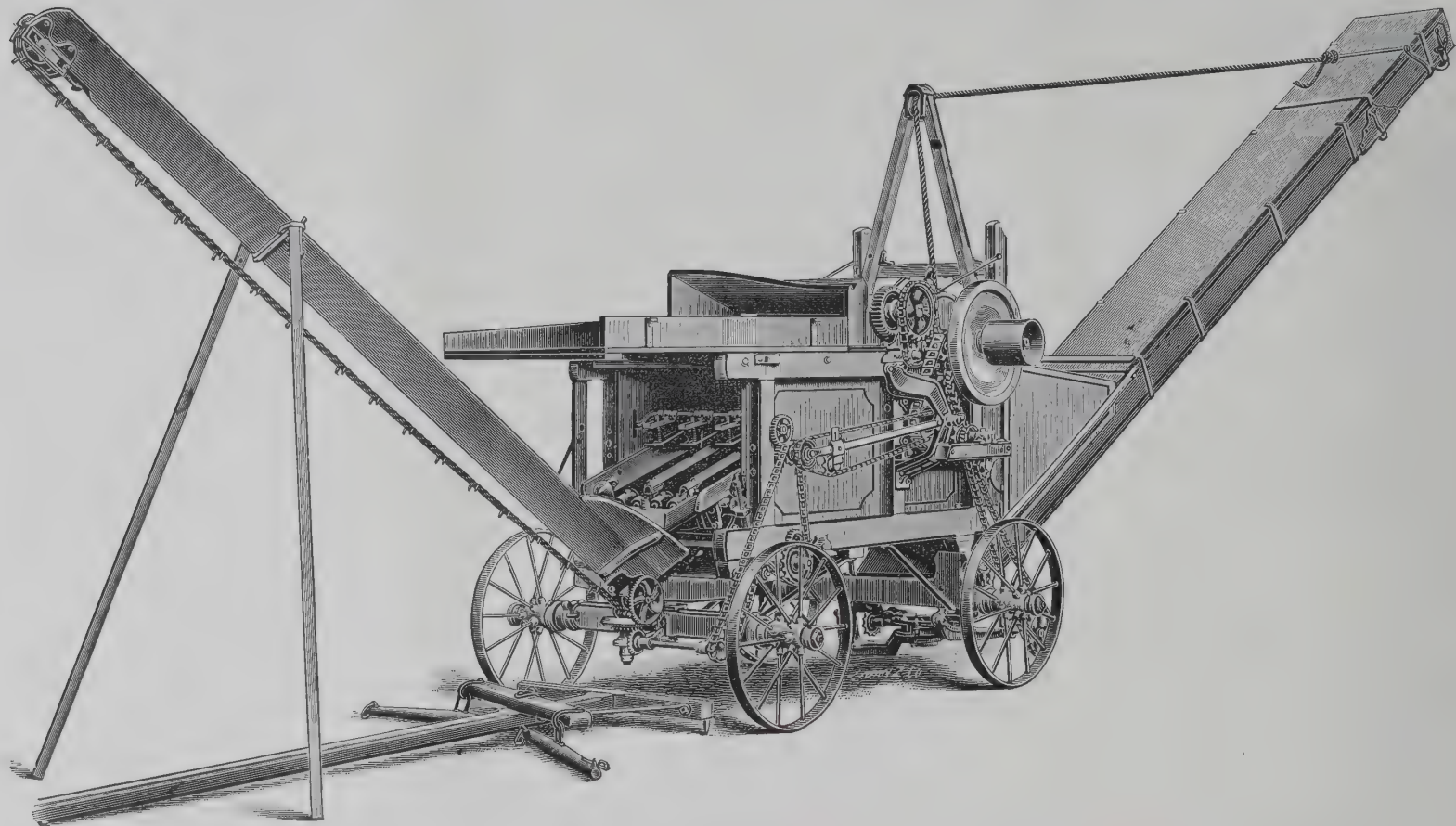
The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

Master Schooner "Florence Shya."



"Keystone" Corn Husker and Fodder Shredder

HUSKS THE EARS AND SHREDS THE STALKS INTO THE BEST FODDER KNOWN.



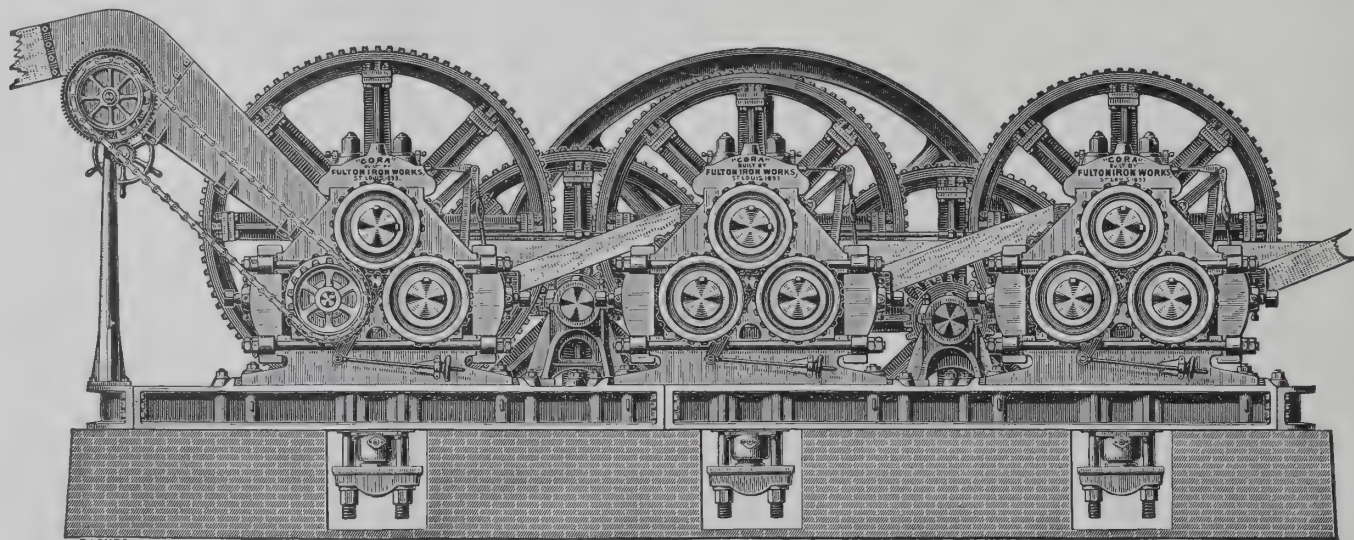
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"CORA" Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by **"FULTON IRON WORKS,"** St. Louis, Mo., U. S. A.

Per S.S. "COPTIC."

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

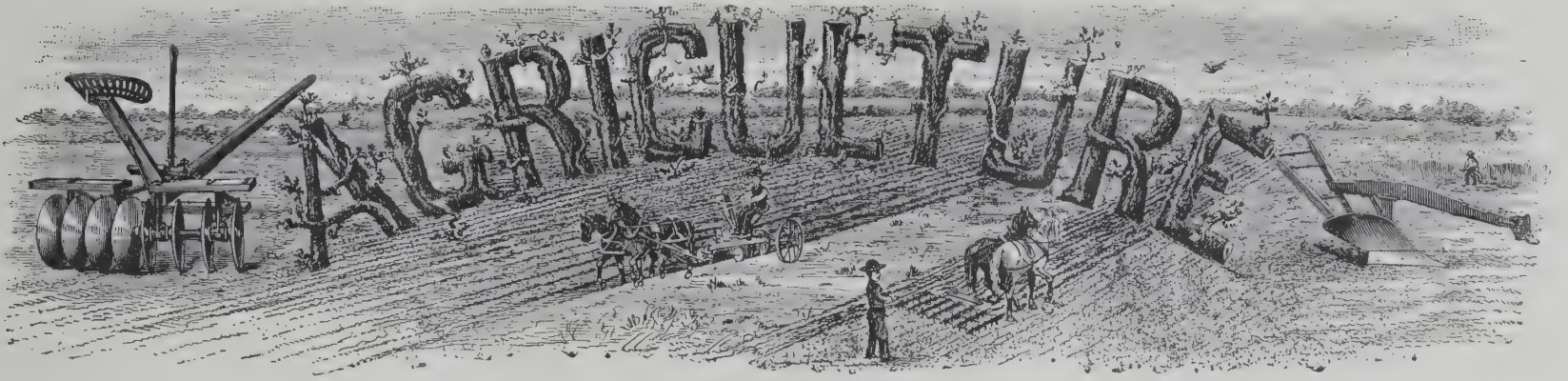
Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104 $\frac{3}{4}$; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

Some Figures of Agriculture.

THE depression of agricultural interests in England, which has been very marked of late years, is illustrated anew in the figures just published in London for the year ending January 1, 1896. These show the cultivated area of Great Britain to be 32,578,000 acres. The shrinkage of land under plow was increased during the year by bad weather. There was 510,000 acres less of wheat grown and 57,000 acres less of rye, beans and peas. The actual loss in the arable area during the past two decades, which cover the period of depression, amounts to 2,137,000 acres. The importation of wheat and flour increased to the value of \$15,000,000.

England is importing each year a larger amount of produce from other countries, and particularly the United States, Denmark, the Argentine and Australia. At the present time Great Britain stands lowest among civilized nations in the number of acres under grain for each 100 inhabitants, and also is at the foot of the list in respect to the number of pounds of grain produced for each inhabitant, the United States standing in both cases first. The number of acres under grain in the United States for each 100 inhabitants is 230, in Russia 190, in the Argentine 150, in Denmark 150, in Roumania 140, in Canada 130, in Austria and France 100, in Germany 75, in Italy 70, in Belgium 40 and in England 26. The product in pounds of grain for each inhabitant is 2,400 in the United States, 2,000 in Denmark, 1,500 in Canada, 1,200 in Russia, 1,000 in France, 700 in Germany, 600 in Belgium, 500 in Ireland, 400 in Italy and 350 in England.

In respect to the area under crops, irrespective of the population, the United States stands first among the countries of the world, and Russia comes second. The land area of the United States is about 50 per cent. more than the land area of Russia in Europe, but whereas the industries of the United States are diversified among farming, mining and manufacturing, the Russians are almost exclusively occupied in agriculture, and the area of cultivation has been rapidly extended of late years. The United States produces 25 times more coal in a year than does Russia, 20 times as much copper and 10 times more iron ore. As the European scheme of colonization is extended in Asia and Africa, the countries made tributary in agricultural products to the big manufacturing nations of Europe, England, France, Germany and Belgium increase constantly in number and products, the United States and Russia depending more largely on their home markets, though Hungary has of late years entered largely in the race in the production of cereals. Agricultural land in England is, in many parts of the island, a drug in the market. The land laws are primitive and oppressive. The competition of foreign countries fostered by the English system of promoting commerce is crushing. The system of rentals, unlike the French system of land ownership or the American system of conditional ownership under mortgages, is not favorable to the best results, and during the 15 years following 1880 the rental value of an acre of agricultural land has fallen in England from 36 to 30 shillings and in Scotland from 34 to 28 on the average. In Ireland, however, the rental value by the acre is about the same as it was 10 years ago. —*New York Sun.*

Spraying for Fungous Diseases.

THERE is now ready for distribution by the United States Department of Agriculture to all applicants a bulletin on "Spraying for Fungous Diseases"—No. 38 of the Farmers' Bulletin series. It is four years since there was published in a former bulletin "a summary of the more important methods of combating some of the destructive diseases of fruits." During this time many improvements have been made in the work, and for this and other reasons it seems desirable to now bring together, in brief, practical form, our present knowledge on the subject. The question as to whether it will pay to spray has long since been answered in the affirmative, so it is not necessary at this time to enter upon any argument in regard to this phase of the subject.

"During the past four years numerous solutions, powders, etc., have been tested with a view of determining their value as economical, effective and practical preventives of fungous parasites. While a number of these preparations have given promise of value, none have been found which fill so many requirements as Bordeaux mixture and the ammoniacal solution of copper carbonate. Of the two preparations, Bordeaux mixture has long been recognized as possessing the most valuable qualities, and it is probably more generally used today than all other fungicides combined. The chief points in its favor are (1) its thorough effectiveness as a fungicide, (2) its cheapness, (3) its safety from a hygienic standpoint, (4) its harmlessness to the sprayed plant, and (5) its beneficial

effects on plants other than those resulting from the mere prevention of the attacks of parasites.

"So far as we are at present concerned, therefore, it is necessary to consider only the two fungicides in question, setting forth the recent improvements made in preparing and using them."

The contents of the bulletin are as follows: Fungicides or remedies for plant diseases; methods of applying fungicides: treatment of grape diseases—black rot, downy mildew, powdery mildew and anthracnose; treatment of apple diseases—apple scab, bitter rot and powdery mildew; treatment of pear diseases; treatment of quince, cherry and plum diseases.

Irrigation and Rain.

THERE come seasons when early in the Summer much concern is expressed in regard to a sufficient supply of irrigating water in our great gravity canals incident upon a light fall of snow in the mountains during the Winter months. People who worry somewhat about these conditions thus early in the season do not credit any benefits to the possible rainfalls that may come from time to time to aid in supplementing the water supply, nor do they place much stress upon the added value of consistent cultivation. We certainly have it well within our power to make better use of our combined facilities, and *Field and Farm* believes this is being done more and more each year.

In the arid regions exceptional seasons will come when the precipitation is sufficient and the distribution even, which will make unnecessary the using of any stored water. A rainfall of 28 inches per annum is considered sufficient for the successful growth of any crop if evenly distributed throughout the cropping season and this allows one-fourth of loss by evaporation. Even a less amount is considered ample by some authorities, some as low as 20 inches, if always applied. For any system of irrigation the question of rainfall is, of course, of first importance, and especially so with the storm water storage system. It is particularly necessary that the minimum annual precipitation, ascertained from observations extending over a number of years, be known. This will indicate the maximum amount of water that will be required to be stored to irrigate any given area.

Even in very humid regions the value of a supply of water reserved for the occasional drouths that occur is realized, many crops being saved or their yield increased. This practice is followed with advantageous results in France and Spain, where the annual rainfall is from 40 to 50 inches. In India irrigation is extensively practiced where the total rainfall is greater than would seem necessary, but the distribution is extremely irregular and cannot be relied upon. The upper Ganges canal irrigates 1,600,000 acres in an area having an average annual rainfall of 33 inches. The lower Ganges canal irrigates 1,187,000 acres with a rainfall of 31.1 inches over the area controlled by this system. On the lands watered by the Agra canal the precipitation averages 27 inches per annum. As irrigation becomes more appreciated it will be practiced in what are considered the humid regions, to increase the yield and offset the consequences of drouth. Thus we see that the rainfall must go hand in hand with the artificial application of water and we of the West must look more carefully after our annual precipitation and save more of it.—*Field and Farm.*

Triumph of American Butter.

IT will be gratifying to American dairyman to learn that the butter product of this country has been pronounced superior to that in some of the old countries. In England a recent test of butter was made in which the samples from Germany averaged the worst of all. Adulterations were discovered in not less than 34 per cent of the specimens examined. Denmark and Holland, which have enjoyed a reputation for first class butter, ranked next to Germany in impurities. The butter from the United States stood the highest test. In 61 lots of American butter not one was found that was bogus or adulterated. This fact, when it becomes generally known, ought to greatly help the American butter-producing industry. It is particularly gratifying that an American product which has suffered so much criticism at the hands of the German press and has been more or less embargoed by the German authorities on account of alleged adulterations, has made the cleanest record of all. The tests made in England show the folly of destroying a good reputation by the use of counterfeit products. There is a profit in first-class pure butter and our manufacturers and lawmakers ought to work together to maintain the high standard that has been established. It is worth millions of dollars to this country.

American Harness Leather Ahead.

FOR many years England claimed supremacy in the manufacture of harness and saddlery leather. While to day American leather is conceded by unprejudiced buyers to be equal, and oftentimes superior, to the English, American manufacturers have found it difficult to overcome a prejudice that was once justifiable, but which may now fairly be called unreasonable. Competent and impartial judges, wherever American harness has been introduced to any extent, admit that it is, grade for grade, not only equal but superior to that made in European countries, and as a confirmation of this judgment American manufacturers have been capturing a steadily increasing proportion of the prizes offered in the great international competitive exhibitions. The reasons for this superiority may be due to the exacting requirements of this country where horses generally receive greater care and are more largely used, perhaps, than in any other part of the world. Here, also, may be found thousands of skilled harness-makers who are always studying how they can best meet the requirements of buyers. Every detail is considered and thoroughly tested before being adopted by these competitors in the manufacturing branch of the business, and with the results already indicated.

To make a first-rate harness, good workmanship, proper proportion and good material are requisite. Form and decoration are incidentals; they are the æsthetic qualities which, while they do not produce durability, greatly increase the money value of the work. The workmanship must be of high order so as to insure the good results that accrue from the other requisites. Proportions, if faulty, will be a positive weakness that will condemn the product, even if the material is first-class. But if the material is not good, no kind of skilled workmanship can make it durable or give it a finish that it will retain for any considerable time. While our medium grades surpass in quality those made elsewhere, owing to bark tannage, no better leather than the best American is cut in any part of the world.

What constitutes the best harness and saddlery leather, and how is it made?

Exhaustive practical experiments have demonstrated that for tensile strength and wearing qualities pure oak-tanned, hand-stuffed leather is far superior to all others. Strength, not weight, is what is asked for in the harness—leather calculated for pulling strain. Therefore, the grain should be preserved strong and close by slow, careful tannage. The side should be stuffed by hand while cold with pure cod and neatsfoot oil in quantity only sufficient to mellow and preserve the leather. The opening of the pores in the leather and the overheating of the fibres are necessarily injurious. Leather tanned with oak bark exclusively is always stronger and more pliable. This fact is so fully recognized that the United States Government specifies in its contracts for harness leather that "the leather must be tanned with pure oak bark, hand-stuffed, and of No. 1 tannage and finish." The army tests fully sustain the claim of our manufacturers that our harness leather is superior to all others in strength and durability, and it is a subject for congratulation that this industry should have gained such importance as to make it possible for such well-known firms as Messrs. W. W. Mooney & Sons, Columbus, Indiana, and others, to devote their entire energy and facilities to the production of pure oak-tanned, hand stuffed harness leather. American manufacturers are always seeking for the best, and that they have attained it is proven by the appreciation which their goods are receiving abroad, especially in the English market.

Trace leather for single strap work is a specialty for which our tanners are well known in Europe and the English colonies. Bridle leather, rein leather in sides and backs, and colored strap leather are much used abroad. Of late our extensive trade has been built up on pure oak-tanned bicycle leather, in sides, backs and middlings. This stock is now being used in large quantities by leading bicycle saddle manufacturers of America and England, who demand in their supplies, tensile strength, durability and handsome finish.

The tanners of other countries have been compelled by force of circumstances, or less creditable reasons, to find some substitute for bark tannage, and it is not likely that our tanners will ever be compelled to do the same thing. All other conditions being equal, harness leather tanned with bark is far less susceptible of injurious effects from exposure than that prepared by chemicals or other inferior astringents. The effect of mud on leather is most injurious, as it so absorbs the grease, hardens and rots the fibre that no kind of treatment can restore it to its former condition, hence any kind of tanning that will best prepare the fibre of the leather to resist the inroads of this enemy is to be preferred.

In harnessmaking, the American manufacturer starts with the best stock and seeks to secure the best results by so proportioning the several parts of the harness, that each will bear the share of the working strain brought upon it. Attention to these methods has made the American farm, express and draft harness the strongest that can be made. Not a pound of leather is used that does not contribute its full share to the strength of the harness, and so unnecessary weight is avoided. The coach and coupé harness, whether modelled after the French or the English style, has many distinct features and is both lighter and stronger. The light American and trotting harness is the ideal harness of the world. Symmetrical in outline, artistic in finish, simple in construction, it gratifies the taste of the most cultivated. The American harness manufacturer excels in taking care to insure the desired results without depreciating quality, and thus produces a very much higher grade of goods at a given price than can possibly be made under the old systems of manufacture. Owing to the immense demand from the home market harness-leather people have never made any great effort to extend their trade abroad. They are ready now, however, to compete with the best European manufacturers and are prepared to furnish goods unequalled in beauty of style and finish, as well as in strength

and durability, at prices as low, if not lower, than can be obtained elsewhere. Foreign importers of harness leather and kindred goods will find it to their interest to establish business relations with American manufacturers.

Winemaking in America.

IN California they make wine in a practical way which is very disillusionizing. The grapes grow on low flat bushes in a dusty soil instead of on huge trellises against a creamy wall. The grapes themselves are brought in wagonloads to the crusher and each wagon weighed very carefully before it is unloaded. After being weighed the grapes are pitchforked to the endless chain, where they are caught up by a perverse current running up hill, a green stream which disappears in the roof of the building. Here is where the crusher is located and also where the grapes are separated from the stems. The grape goes on and the stems return into enormous vats. Once free of the crusher the thick river of fruit branches variously; one stream turns on itself and carries the stems down; a dozen others wind their devious ways to the vats in the corner. The juice is wrung from the skin and pulps but is not free of them. The tanks receive this mixture, which is only sugared juice with no suggestion of wine. The mixture is allowed to stand for several days and then the mystery begins, for it commences to get warm. In a few hours it is a warm sticky mass, a little later it is hot, boiling and bubbling with a thick pink froth dripping over the edge of the tank. It is like a small Vesuvius and like the volcano throws off a poisonous gas, bitter and pungent. The tanks sometimes have eruptions, exploding and mangling people or blowing off the roof. After a few days of this boiling the wine is pumped off to another tank, where it simmers and ferments and is then perfect. But the winemakers are not through with the pulps and skins, which are put under hydraulic pressure and squeezed into a dry, spongy mass called "cheese." A thick, sweet wine is obtained by the hydraulic pressure not so valuable as the first. The cheese seems as dry as possible, but if left in the sun will commence to smoke and ferment. There is still wine in it. Cream of tartar is made from this "cheese." The huge dry, brown piles of stems are used for fuel.

Crushing the Army Worm.

IN a private letter regarding the best methods of fighting the army worms, which have made their appearance in isolated localities, W. A. Snow the celebrated entomologist of the University of Kansas, says that rolling, ditching and fencing may be employed. That the use of London purple and Paris Green should not be resorted to where the crop is to be used for feed. In ditching or fencing the idea is to make a barrier to their progress, allow the worms to accumulate and then crush them.

The most expeditious way of getting at them is to use a regular land roller, particularly as the great object is to destroy the first "army," there being two or three generations in a single season.

Upon the theory that it is an ill-wind that blows no one any good, the dealers in farming machinery in the localities affected by this pest, will undoubtedly profit by the new use thus offered for the rollers.

American vs. Scotch Petroleum.

WITH a view to giving Scotch petroleum protection against American a committee of the House of Commons has inquired into "the conveyance and storage of petroleum." This is how the subject of inquiry was officially put. The committee was asked for and appointed in the interest of the Scotch oil companies, and the line of evidence proves the drift of the inquiry. English experts examined by the committee, notably Professor Bonerton Redwood, assert that the flash point of petroleum ought for safety's sake to be 100 to 120 degrees. The flash point of Scotch (shale) oil is 100 degrees; in the case of American oils it would be necessary to eliminate 30 percentage of its constituents to bring it up to 100 degrees. If the standard flash point be raised the Scotch oil refiners will sell their product at a higher figure. That is what the committee is for.

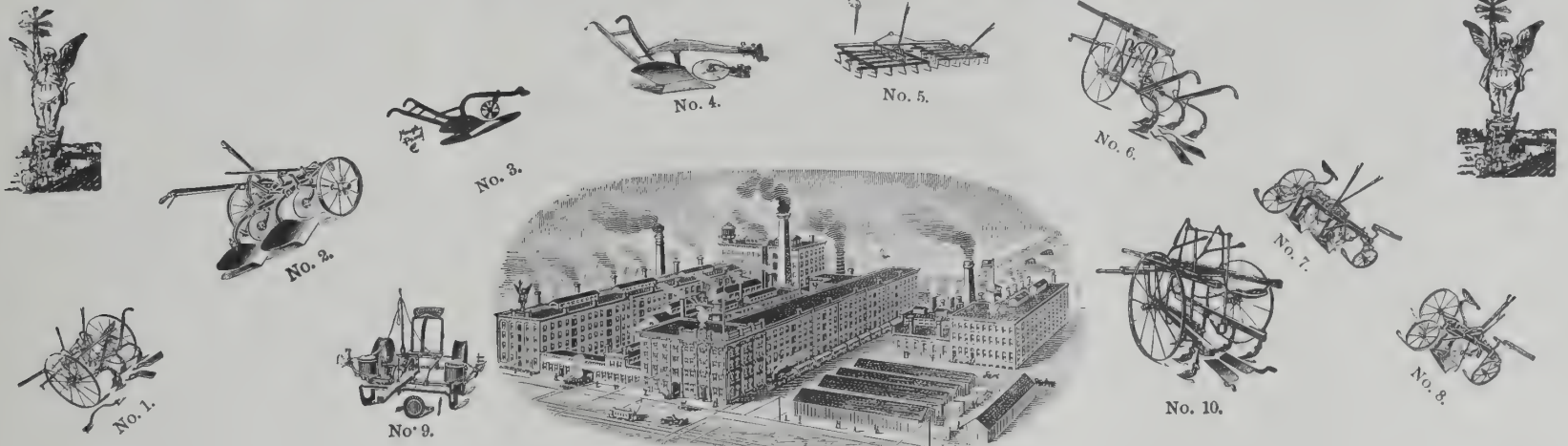
The Standard Oil Company are sending American experts to tell the committee how the privileges that may be accorded to the Scotch companies will affect the consumers. Professor Redwood and other English experts who have been examined agree in stating that when the public can buy either ordinary Scotch or American oil they invariably pay the higher price for American, as it gives a better light. The committee won't report to the House of Commons till the end of the session, but that is no reason why American interests should delay representation.

Lord Kelvin is one of the witnesses who has testified before the commission. He declared that the sale of paraffin for ordinary use at a lower flashing point than 130 degrees ought to be prohibited. He did not think it would be wise to restrict the manufacture and sale of lamps.

MR. D. J. PARTELLO, United States Consul at Sonneberg, Germany, has taken a great interest in disseminating in his consular district information regarding American manufacturers and offers to serve any of these by distributing their catalogues and price lists among importers most likely to be interested in their goods, without any charge for his time and trouble, providing they will send him the catalogues with sufficient funds to pay the local postage, whatever that may be.

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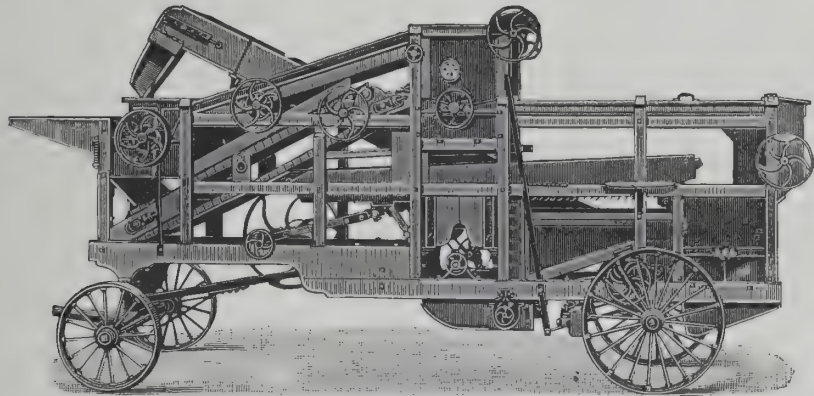
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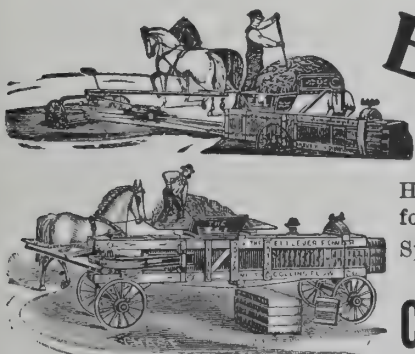
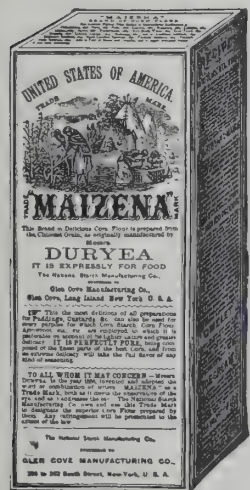
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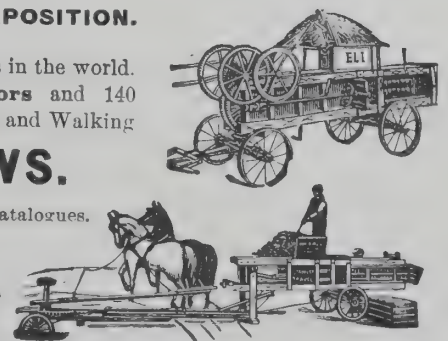
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Our Trade with Africa.

THE New York *Sun* told recently of the great increase of our trade in mining machinery in South Africa. The growth of the general export business has been correspondingly great, and the increase during this year has been little less than phenomenal. During the year ending with last June the value of the exports was \$5,000,000. Such has been the growth of business since then that it is estimated the exports for the year ending with June will be at least \$10,000,000. What this means will be seen readily by a glance at the figures for two or three previous years. The value of the exports for the year ending with June, 1894, was \$4,122,912; that for the preceding year, \$3,500,000, and that for 1892 was \$3,400,000.

One reason for the increase of shipments is that now steamers are available for the South African trade. A few years ago the business of southern Africa was either so largely in the hands of the English or in such condition that only sailing vessels plied between here and the South African ports. For the last three years steamers have been sent from here, and although no regular line has been in operation, there are firms which send steamers out pretty regularly, now at the rate of about three a month. They are tramp steamers and they take cargo out but do not return.

While comparatively few articles were sent formerly to South Africa from here, now almost every kind of commodity that this country produces is exported. Trade is drummed up, and Americans are pushing their interests vigorously. Only recently the Oregon mill interests have worked their way into the African continent, and steamers are sailing from the north Pacific coast to South African ports. Of course, the great bulk of the shipments from this country are made from the port of New York, but vessels are dispatched also from Gulf ports and others from San Francisco.

The shipments from the South are of wood. All the white pine used in South Africa is sent from this country. The shipments from San Francisco are said to be mainly of wheat. During the present year wheat has formed a very large portion of all the shipments from this country. The reason is that the African wheat crop failed, and the Australian crop was an utter failure.

What the future has in store for the business relations of this country and South Africa would seem to be almost without limit. One of the things which work against the shipping firms is Africa's paucity of good harbors. Harbor improvements are under way there, however, as for example at Port Natal, the port of Natal, where the depth of the channel at the bar was increased from 1882 to 1892 by 7 feet and 7 inches. The depth in 1892 was 13 feet 8 inches.

What America has to look forward to may be seen from a comparison of the figures of its exports and those of England. America's exports to South Africa were \$3,500,000 in 1893 and England's were \$46,000,000. The total exports of manufactures from this country last year were in the neighborhood of \$200,000,000, or less than half of Germany's, and less than a quarter of England's. Yet American manufacturing plants are capable of turning out twice the amount of goods requisite for the supply of this country in a year. One of the things, not always spoken of as a manufacture, that South Africa got from here is \$1,000,000 worth of rum, which was sent out in one year.

Naturally most of the exports for Africa are staples, but some fancy articles, among them bicycles, are being introduced there. A good many medicines are sent over. Everything in the line of cheap wooden furniture is shipped. Agricultural implements are sent in large numbers, mainly of the old-fashioned kind, or what are now regarded as old fashioned, although some mowers and reapers are going out. The reason the demand is for wares of the old style instead of the labor-saving machinery is said to be, not that labor is cheap over there, but the farmers prefer to do things in the old way. A good many cheap plows are exported.

An idea of the variety of the shipments made from United States ports to South Africa may be gained by a glance at the manifest of the cargo of a ship now on the water. Among the goods there are lard and lard oil, shoe leather, leather, hardware, lamp goods, codfish, corn, flour, canned meats, axle grease, turpentine, varnish, manufactured wood, barbed wire, doors, handles, parts of plows, axes, cigarettes, canned fruit, baking powder, brooms, carriages, nails, apples, apricots, canned oysters, kerosene, wheat, clocks, medicines, evaporators, hams, stoves, wheelbarrows, dried fruit, sugar, cotton goods of many sorts, spokes and hubs of wheels, lubricating oils, crucibles, ropes, seeds and iron pipes. One of the commission merchants speaks of having seen many tons of iron pipe loaded for Africa. Besides, there are in the cargo steam pumps and starch, plows, glassware, gloves, curtain fixtures, rubber goods, sporting goods, shovel, mining machinery, furniture, an organ, whips, hay, clothing, soap, seeds, cartridges, galvanized oilers, wire mats, oats, lumber, nectarines, candy, can openers, tongues, hay cutters, iron bolts, refined petroleum, books, candles, paraffine wax, suspenders, playing cards, glucose, mail coaches, knives, electrical machinery and supplies, hammocks, paper bags, trunks, exterminators, tomatoes, syrup, white duck, Florida water, windmills, benzine, oil stoves, razor strops, coffee mills, essences, quantities of pain killers, copy presses, iron sieves, picture frames, bird cages, plated ware, watches, dental chairs, dress goods, catalogues, lawn mowers, scales, wooden horses, drugs, typewriters, paper, charts, rye, bicycles, typewriter supplies, lead pipe, paint, roofing, carts, trucks, canvas, canned salmon, feed cutters and electrolytes.

In many, if not most, of these products there can be no competition between this country and England. Of course, England can send no wheat. In manufactured hardware, the supremacy of American goods is acknowledged. The English goods in this line, it is said, are heavy without being any stronger than the American, and, while the African residents stick by the old methods in farming, they like light articles for hand use and for use round their buildings. The

exports of doors and sashes and made up woodenware generally, together with the metal fittings and fixtures that go with these things, are enormous. In structural iron goods the exports are light, which would argue that Africa is not yet anxious to have very tall buildings.

Ordinarily the time of the ship's passage from here to the African ports is about 30 days. It is cheaper to ship freight from here to those ports than from England. The freights are less. One feature of the trade of England and America with South Africa is the difference in their terms of sale. English merchants, the commission houses of this city say, are ready to give six months' credit to the African dealers, whereas American houses draw promptly for all shipments. Many of the African houses have London connections and the financing is done at the London offices, which simplifies matters for a New York firm.

There are said to be about 20 commission houses in New York sending goods to South Africa, and besides these there are of course a great many direct shippers, many of the large manufacturing firms making their own shipments. It is not so long ago that Boston did a large part of the shipping done by the United States to South Africa, but now the bulk of it is done from this city.

The steamers call at various ports around South Africa, Mossel Bay, Delagoa Bay, Tamatave, East London, Algoa Bay, Port Elizabeth, Port Natal, Cape Town, and so on. All the way to Delagoa Bay, the port of the Transvaal, the consignments go from here in the one ship. Goods for the Zambesi River country have to be reshipped at Delagoa Bay. English companies run coasting vessels from Port Natal, Delagoa, etc., northward and to Mauritius. Although Delagoa Bay is the port of the Transvaal, Johannesburg is the centre toward which all lines of travel converge from the coast points, and it is the objective point for several railroads, although they will be pushed on to Bulawayo in Matabeleland.

Commenting on the same subject the New York *Herald* said: "The bottom cause of jealousy between England and Germany in the affairs of the Transvaal is trade rivalry. It is apparent that the mineral riches of that country must make it for many years to come a centre of speculative activity and a most promising market for the wares of the great manufacturing countries. The German exports to the Transvaal, which in 1889 only amounted in value to \$238,000, in 1894 had increased more than sixfold, the total for that year having been \$1,428,000.

"While the English and Germans are quarrelling for the possession of South African trade, it is quite possible for the United States to obtain a permanent foothold in that region. We are already sending from our Pacific ports large quantities of timber, lumber and breadstuffs. Our total exports to British South Africa, including the Transvaal trade, amount in value to nearly \$4,000,000 per annum; but there seems to be no adequate reason why we should not find there a market for mining machinery, steel rails, steam engines, locomotives and all the varieties of building material. The demand for iron, steel and lumber for constructive work in a country striding forward as rapidly as is South Africa will be enormous. It will be the fault of our own manufacturers and merchants if they shall not secure a fair share of it."

Our Foreign Trade.

THE chief of the Bureau of Statistics reports as follows the total values of the exports of merchandise from the United States for

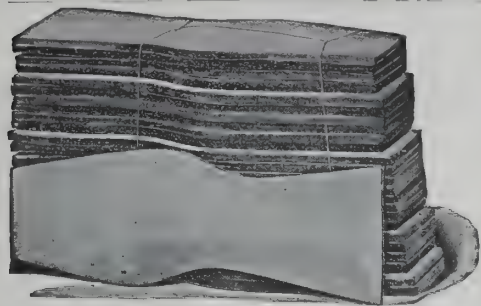
	1896.	1895.
April.....	\$70,944,343	\$65,255,641
Ten months ended April 30.....	749,038,125	688,303,156

In April last the exports exceeded the imports by \$12,239,044. In April, 1895, the excess of imports over exports was \$3,494,317. During the 10 months ended April 30, 1896, the excess of exports over imports was \$82,685,063, and for the corresponding period of the preceding year was \$84,024,089.

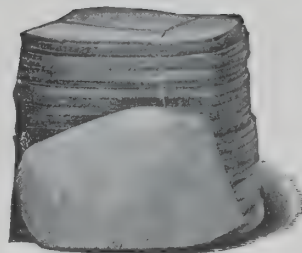
In April, 1896, the exports of gold exceeded the imports by \$2,639,764, and during the 10 months ended April 30, 1896, the excess of exports over imports was \$55,989,103. The excess of exports of silver over imports during the 10 months ended April 30, 1896, was \$38,990,720.

LORD SPENCER, recently addressing an audience in Australia, made the following significant remarks as to the comparative merits of the English and American agricultural implements: "The English manufacturer has in recent years lost ground in many directions. I will give you an illustration in point. I found the other day that upon a farm of mine in England nearly every pitchfork that was used was of American make, bought in the country towns. And not only that, but reaping and cutting and binding machines and many other implements of agriculture were also made in America. I am patriotic enough to buy English goods when they suit me ['Hear! hear!'], and the only reason why I bought American was that they were better adapted to my purpose and cheaper than the English article." Investigation would probably show that these farm implements are sold cheaper in England than here. And yet the election of McKinley is to be urged as a means of reimposing a high duty on such articles.

THE official statistics of the production of salt in the United States during the calendar year 1895 have been compiled by Statistician E. W. Parker, of the United States Geological Survey. The report shows the total production was 13,666,649 barrels of 280 pounds each. The valuation of the product is \$4,423,086. These figures show an increase of 600,000 barrels in product over the previous years, but a decline of \$300,000 in value. The largest production was in New York, with 6,795,616 barrels, an amount double that of Michigan, which comes next in quantity.



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FROM THE U. S. GOVERNMENT.

{ DEPARTMENT OF THE INTERIOR,
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Gentlemen—We have now in use in the Bureaus of this Department nearly eighty Denmore machines. We have no complaint from the users of them, hence we conclude they are giving entire satisfaction. Respectfully,

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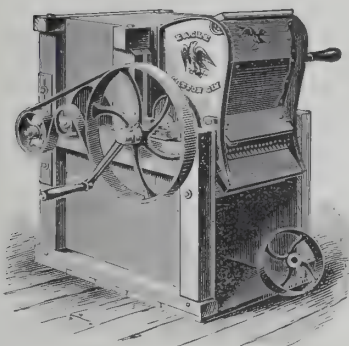
The most perfect miller for coffee ever offered. It will do the finest work on tender as well as hard coffees, and do it without waste or breakage.

These Machines are in successful operation in many of the largest Coffee Houses in this country, and are well worthy of investigation by Handlers of Coffees.

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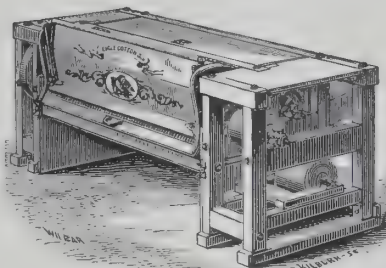
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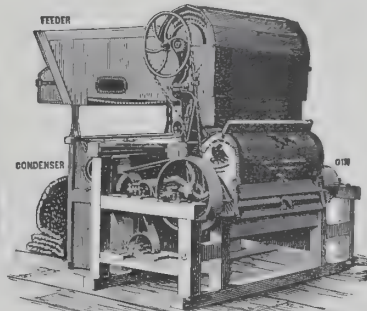
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For further details, illustrated Catalogues will be furnished on application.

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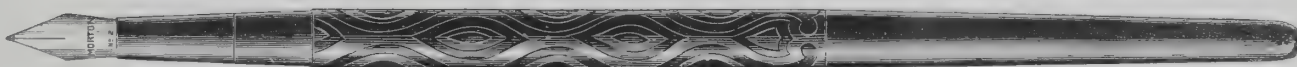
Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

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On receipt of \$10 we will send a sample line at export prices.



have holders made of best quality vulcanized rubber, are elegantly finished and are fitted with best make of Gold Pens. Foreign buyers will do well in corresponding with us, as our prices will be found satisfactory

Our goods can be ordered through any commission house.

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SAFETY KETTLE BOTTOM.

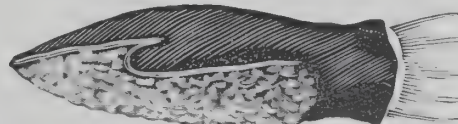
Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

Stove Polishing Mitten,

FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands.

For Particulars address **DIAMOND HARDWARE CO., 620 Atlantic Ave., Boston, Mass., U. S. A.**



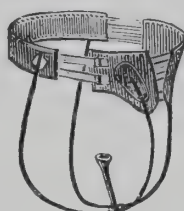
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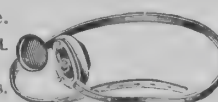
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Sending Shoes Abroad.

AT the present time there are more shoes being sent abroad from various factories in Brockton, Mass., U. S. A., than the ordinary individual has any idea of.

A few years ago, when an effort was made to introduce Brockton shoes into Australia, England and other distant lands, the opinion was very general that such trade could never be secured in any considerable amount. It was argued that the styles worn abroad were very different from those in vogue here, and that it would be difficult, if not impossible, to suit a foreign population with shoes which were worn in this country.

Subsequent events, however, have demonstrated that this opinion was a fallacious one. Not only have Brockton shoes been successfully introduced abroad, but the sale of them has grown very rapidly. In making this statement it is understood to mean that the increase is small as compared with the trade at home. The percentage of shoes which are being shipped from Brockton abroad is very small as compared with the production which is put out in the United States, but at the same time it is a considerable one and rapidly growing. There are several firms here who are successfully catering to trade in England and other places, and who have established quite a business in Australia. These are the two principal points to which Brockton shoes have been sent, although many are, of course, forwarded in small lots to all parts of the world. Australia, especially, seems to be a fertile field for Brockton footwear. This is, like the United States, a comparatively new country, and is having a rapid growth. The inhabitants are willing to take up with new ideas in shoes as well as in other things.

There are three or four different firms here who are now shipping a great many goods to Australia and its neighboring islands, and are carrying on this business with considerable profit to themselves as well as satisfaction to their trade. It is interesting to note this tendency to increase the shipments of Brockton goods abroad, as it makes a valuable outlet for the product and at the same time is of advantage in making the goods well known in foreign lands.—*Boot and Shoe Recorder.*

Yankee Shrewdness in England.

UNITED STATES CONSUL PARKER, at Birmingham, England, has contributed to the State Department a special report on the remarkable development of the business of making steel tubing at that place caused by great increase in the use of the bicycle. Incidentally he tells of a shrewd Yankee business transaction which has placed the British bicycle makers in bad plight. The American manufacturers, foreseeing a great demand for wheels, not only purchased all of the stock of steel tubing on hand in England, but gave orders that engaged the output of many of the factories for a long time to come. And so it happened that when the "craze" struck England the British bicycle makers found that they had been caught napping and were short of material. Immediately there was a rush to start up new steel tube plants, and so many have been projected that overproduction is feared in the end, but meanwhile there is a stringency. To show the extent of the increased export of this tubing to the United States the consul says that, while the entire export for 1894 was \$85,899, that for the first quarter of this year amounts already to \$231,200. Meanwhile there has been a great decrease in the exports of finished British bicycles to the United States, and their value has fallen from \$478,810 in the first six months of 1893 to \$90,968 for so much of the current year as has expired.

Combined Sawmill and Steamboat.

A SOMEWHAT novel manner of working up lumber is presented in the project of parties who are just completing a mammoth floating sawmill on the Ohio River at Louisville, Ky. They have named the craft "Old Hickory." It is thoroughly equipped with all modern machinery necessary for a first-class lumber mill and steamboat combined, and will anchor at points along the river to work up the dense forests that line a portion of its banks. There is a floating chute or runway for logs that extends out from the boat, the outer end of which is submerged so that the logs are floated over it, where they are grasped by the log tongs, and a rope which runs over a drum operated by steam power, quickly hauls them up in front of the massive circular saws, where they are at once made into lumber and loaded on to barges alongside. The floating mill has a capacity of 15,000 feet per day.

—Wayne County, Tenn., is quite an important point in hoop-pole production. One man has shipped about 2,000,000 poles from there since September last.

—Among recent export shipments made by the Pennsylvania Agricultural Works, York, Pa., U. S. A., was a carload of implements destined for Brazil, and an engine and separator to Guaymas, Mexico.

—The latest adaptation of paper is to the manufacture of coffins. Many undertakers are said to be now using cheap coffins pressed out of paper pulp, which when polished and stained look quite as well as those of wood, besides being cheaper and more lasting.

—The little deluge hose nozzle has been put on the market by the Hancock Inspirator Company, Boston, Mass. The nozzle can be instantly set for a straight stream, umbrella shaped spray, fountain spray or flat spray. It is made of the best composition metal, and is warranted not to rust, break or in any way get out of order.

An Electric Bicycle.

IT is claimed that an electric bicycle has been invented and built in New York City, and that it has shown, upon trial, a speed of 50 miles per hour. It is said that the inventor claims that this tremendous rate is by no means its utmost limit, but no one has yet dared to try it up to the extreme. To a wheel weighing 27 pounds a battery, motor and switchboard have been added, which together bring up the weight to 60 pounds. The battery, which is known as the dry chloride, is the main part of the invention. Its weight is about 15 pounds, which is considerably less than anything used in previous experiments. With this battery a force can be maintained, it is claimed, which will carry the bicycle over ordinary country roads for a period of 48 hours. The electric attachments occupy comparatively little space. They can be easily detached, and the machine can be used in the ordinary way. Should the battery or any part fail, it is not necessary to remove these parts, but a small switch will turn off the current, and the rider can use the pedals. The inventor is an electrical engineer of experience. He considers the battery which operates the electric bicycle his greatest achievement.

An Automatic Electric Railroad.

THE new Marquette and Iron Range Railroad runs from Lake Superior 15 miles inland to the mines, and in this distance the total grade amounts to a rise of 800 feet. The freight will be exclusively iron ore. The cars will be run in trains of 30 each, each train to be supplied with an electric generator, connected with the axles. The grade is such that the loaded cars run down by their own weight, and the dynamos generate a current, which is taken off upon a trolley wire and is used to haul the empty cars back. The engineers are figuring on using the dynamos as motors on the return trip to save expensive machinery.

Greatest Tunnel.

HAVING already the greatest power plant in the world, the United States will, within a few years, have the greatest tunnel ever constructed, a tunnel compared with which Mont Cenis, St. Gothard and Arlberg tunnels under the Alps will be mere gopher holes, as the longest of the three named is less than ten miles, while the one now contracted for in Colorado is 48 miles in length. A company has undertaken the stupendous enterprise, and have filed a contract in Colorado City, one of the specifications of which is that work shall commence within 60 days. It will begin at Sunderlake Creek, near Colorado City, and is to have the regulation dimensions of railway tunnels, 14 feet wide and 18 feet high. There will also be branch lines in the tunnel proper, one 16 miles long, connecting Cripple Creek with Colorado City, the distance between the two cities by railway now being 54 miles. The main line is contracted to be in operation before March 1 1906.

Improvement in Paper Dishes.

NOTWITHSTANDING the decrease in the cost of china and earthenware dishes for the last few years, the paper pulp dish industry has easily kept pace, and with recent improvements in manufactures the latter is becoming a strong competitor. The latest feature in this line is a process of plating or coating dishes and utensils made of pulp, to make them resemble china, silver, etc. The aim of the new process is to enamel or plate the paper pulp dishes with a substance as effective as the best used in crockery manufacture, and at the same time very inexpensive. This substance is procured from waste silk. Defective cocoons and those containing a double end, waste made in winding waste procured from the silk factory, sweepings from the silk mill, and, in fact, anything pertaining to silk wastes are utilized. The waste is gathered, dried, cut up, ground, and then dissolved. Some grades of pulp, especially that made from the white woods, have but little affinity for this silk waste enamel; this is remedied by first dipping the dishes into a bath of strong sulphuric acid, after which the plating "sets" all right. If the liquor is from the waste silk direct a sort of silvery and glossy tint is procured, and the plating is very beautiful. Any shade is made available, however, by the use of dyes. After the articles have secured the enameling the usual finishing processes of tableware follow, thus completing the goods for the market.

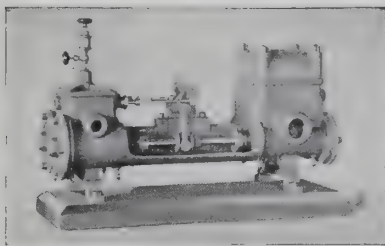
THE American liner St. Paul has "found herself," and has done so to such good purpose that she has broken the record for the passage from Southampton to New York. This is the more gratifying as she was not built primarily for extraordinary speed. She was expected to be a fast ship, but speed was not made the first consideration, as it was in the case of the Campania and the Lucania. Economy of coal consumption, comfort, strength and carrying capacity were given chief attention, and the result is that the St. Paul can earn a profit when another vessel might lose money for her owners. And with all this the St. Paul and her sister ship, the St. Louis, have proved themselves among the half dozen fastest merchant craft in the world.

—It was recently reported that the Kelly Ax Mfg. Company, of Alexandria, Ind., formerly of Louisville, Ky., had made an assignment, but such is not a fact. It is true that the move of the company from its former locality has not been as satisfactory as was expected, heavy outlays of capital being required to establish it in the gas belt. The plant is now in excellent condition, and has full order books for future work.

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THE DEANE STEAM PUMP CO. HOLYOKE, MASS.

Pumps for Every Service.



5¼-3¼-5 Duplex Pump.

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BOILER FEEDING,

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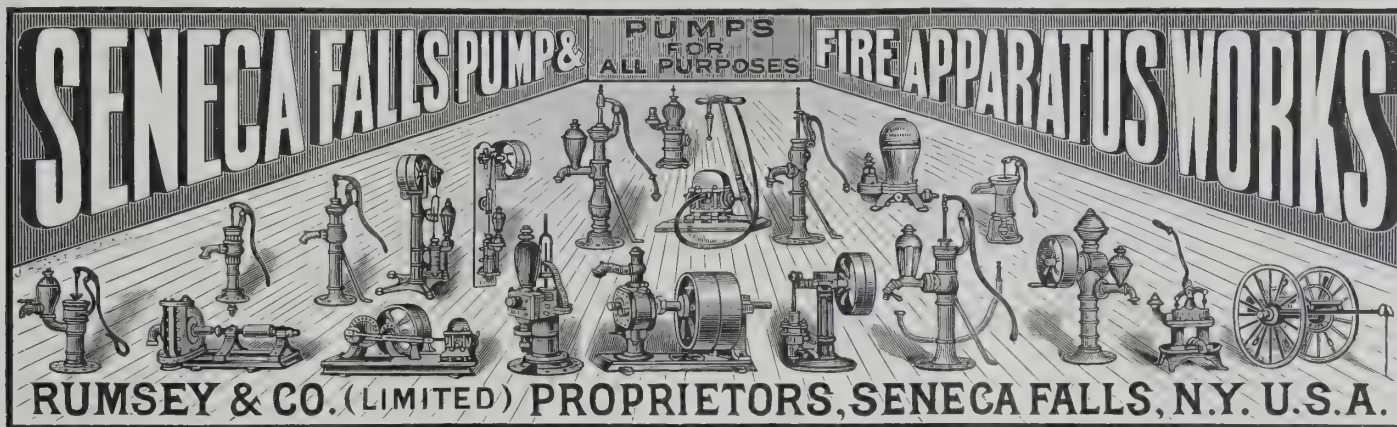
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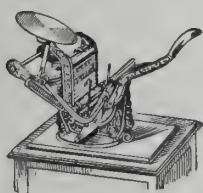
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IN THE UNITED STATES.



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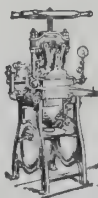


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Soap Makers' and Butchers' Machinery,

462 Ellicott Street, Buffalo, New York, U. S. A.



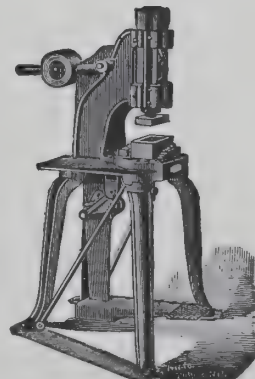
Swing Foot Lever Soap Presses, Nos. 1 and 2. Combination Foot and Steam Power Soap Presses. Improved Soap Remelting Cutchers, either with or without Horse Power Engine attached. Seamless Steam Jacketed Kettles. Steamed Jacketed Toilet Soap Kettle, with Agitator (three different styles). Steam Jacketed Rendering and Refining Kettles.

Improved Lard Dryer, Mixer and Cooler. Steam Jacketed Vacuum Pans, Hotel Kettles for Boiling and Steaming in Hospitals, Institutes, Barracks, Hotels, Asylums, &c., &c. Steam Jacketed Glue Pot Heaters. Iron Soap Cutting Frames, with Adjustable Wires. Soap Dies, for Stamping and Moulding the Soap. Hand Stamps, Steam Traps, with Balanced Valve, &c.

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Emblem Pins.

EMBLEM scarf pins are made in a variety of forms for various trades and callings. For example, there are two pins made especially for druggists' wear: one a gold mortar and pestle, the other formed of a druggist's scales and mortar combined. These are also made up in the form of watch charms, as are many other of these special designs. There are made for butchers one pin with a cleaver, and another having a saw, cleaver and steel combined for a head. A scarf pin made for printers has for its head a gold composing stick. For telegraph operators there is a pin with a ticker for a head. There is a scarf pin made with a head in the form of a palette and brushes, and with the dabs of paint represented by tiny patches of enamel, for artists; for musicians, there is a scarf pin in the form of a lyre. For tinner's there is a pin with a pair of tinner's shears for a head; for saddlers, a pin with a head in the form of a saddler's knife. There is a pin with a plane for a head for carpenters, a horse and rider for jockeys, a locomotive pin for locomotive engineers, a lantern for trainmen, and a ticket punch for conductors. There are pins, one with a hook and ladder for head, one with a fire engine, and another with a fire hat and trumpets made for firemen, and there are various other special scarf pins.

Some of these trade pins are worn more in the city and some more in the country; but, altogether their sale is decreasing, while the sale of society pins is increasing, more and more men preferring the society to the trade pin.

Of emblem pins in general far more than ever before are now sold. They are worn by the members of various military, benevolent, veteran, trade and social organizations, by college societies and by graduating classes from schools, and they are produced in a very great variety of design.—*New York Sun*.

We Were There.

BESIDES our official envoys at the crowning of the Czar we were represented very handsomely by the American locomotive which drew him from the new capital of his Empire to the old one, where the round and top of sovereignty has been imposed upon his line since it came into existence. In all the objects of interest there gathered from east to west, it is safe to say there was not a smarter thing or one more intrinsically worthy of admiration. Standing as the type of its kind it is much more important than the crown which the young sovereign puts on, and, considered as an example of workmanship, it, of course, beats all creation, according to the custom of the country from which it comes.

American Art Appreciated.

THE taste of the public indorses the judgment of the critics who, at the opening of the Royal Academy Exhibition in London, assigned the honors of the year to American art. The crowds which daily throng the galleries are unanimous in according the first place among the portraits to Mr. Sargent's picture of Mr. Chamberlain, while Mr. Abbey's scene from King Richard III., undoubtedly the picture of the year, has always an admiring crowd before it. It attracts not only on account of its masterly composition and suggestiveness, but also by its exquisite painting and richness of color. There is nothing more strikingly brilliant in the whole exhibition than the vivid crimson of Crookback's robe.

A Great Need Supplied.

ON page 40 our readers will find advertised the handiest and most useful arrangement that has ever been brought to our notice for marking names and addresses on packages, show and price cards, bulletins and in fact for doing everything that has heretofore been done in an inferior manner with marking pot, brush and stencil. Its great simplicity and utility must commend it to every manufacturer, merchant, publisher and other business persons who require at any time or for any purpose a marking outfit.

NO other country in the world shows half the number of patents granted in the United States during the past quarter of a century, the total for this country being nearly 500,000. The relation which exists between industrial demand and inventive activity is very close. During the past year there has been exceptional attention awarded the line of compact baling of cotton, pneumatic straw packers, aluminum for electrolytic action, bicycles, telephones and electric locks. Pneumatic drills for cutting stone have been placed on a higher plane of utility and the requirements of several large Western enterprises, like the Chicago Drainage Canal, have led to the production of excavators of wonderful capacity and power.

BRUNT & THOMPSON, East Liverpool, Ohio, U. S. A., manufacturers of porcelain and electrical supplies recently received an order for a big shipment of porcelain electrical goods to be sent to Sibi, Beluchistan, India—just about half-way around the globe. The order came by mail and required a little more than 40 days' time to reach here, and the goods will go via New York and Liverpool, Eng., then through the Mediterranean Sea and Suez Canal to Bombay, India, and from thence by rail inland almost to the little country of Beluchistan. The shipment will be 90 days in transit if it meets with no delays.

—The German manufacturers have made a failure of the bicycle trade. The demand for the American wheel has closed the doors of many of the German factories.

Trade with Japan.

WIRE nails are now made at Everett in the State of Washington, out of wire largely imported from Germany, and these nails are mostly sold in Japan, there being a rebate of 99 per cent. of the tariff duty on wire used in exported nails.

In relation to the extension of our export business in iron and steel products, the *Journal of Commerce*, New York, says:

"Following the confirmation of the statement that the Carnegie Company had taken a contract to supply 10,000 tons of rails to Japan, came the announcement of a Cleveland paper that a mill in that city had contracted to deliver 600,000 pounds of wire nails in the same country, and now a dispatch from Milwaukee states that the Bay View Mills of that city are making rails for Japan, total quantity not stated, but 500 tons are being put on board a steamer for Buffalo, where they will be transshipped to this city, from which they will start on their ocean voyage. The same dispatch says that the Illinois Steel Co. has shipped several consignments of rails to Japan, but this is a circuitous way for the news to get out and there may be an error in it."

American Coal Machinery.

THE excellence of American coal-conveying machinery excites the admiration of English engineers. The question of conveying coal to the furnace with the least possible handling, which forces itself upon the attention of every designer of electric works, becomes of more and more importance in proportion to the size of the undertaking. An installation of a most successful coal-conveyor, which is mentioned by an English electrical paper as a desirable model for British engineers to follow, has been made in a New York power station. As the station is situated some distance from the coal supply, the fuel is delivered to the station by teams, which dump the coal into a hopper. The coal is drawn from this hopper into a bucket conveyor, which delivers it to the storage tanks above the boilers. These tanks hold 1,000 tons, and deliver the coal from chutes to the boiler-room floor, from which it is fed into the boilers. The conveyor on its return passes under the boiler-room floor and draws the ashes from the hoppers under the boilers, and carries them to the upper part of the building, where they are stored until carried away by carts.

Modern Workmanship.

THE advance in the accuracy of workmanship in machinery is one of the remarkable features of manufactures. Formerly, if a shaft could be made right within 1-32d of an inch all was well. Indeed, under old processes this was as fine a degree of correctness as the eye could perceive. But this was altogether too far from perfect to answer many purposes, and mechanics set about devising some means to insure more absolute accuracy. One of the first suggestions that the eye was less reliable than the fingers came from the fitting of certain cylinders with plugs. It was found that a number of plugs could be made all precisely alike, so far as the eye could judge, but the veriest novice detected a difference in their size the moment they were applied to the hole for which they were intended. It is said that now the difference of 1-5000th of an inch can readily be perceived by the most inexperienced person.

THE attention of our readers is called to the advertisement of the National Hardware & Malleable Iron Works, Thomas Devlin & Co., Philadelphia, Pa. U. S. A. This house is one of America's largest manufacturers of malleable iron fittings and hardware for saddlers, carriage, wagon and truck builders and other purposes, which they have the largest facilities for making and marketing. They publish catalogues of their various lines which will be sent to those dealing in those lines, and those opening business relations with this house will find their methods and customs of doing business all that can be desired.

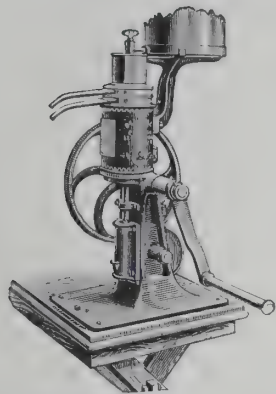
THE copper industry of Montana is growing rapidly. Each year witnesses marked improvement in the method of treatment and sees the volume of export climb higher and higher. Already the State produces more than half the copper product of the United States and more than one-fourth the product of the entire world. And the present outlook points very strongly to a time not very far distant when Montana will produce half the copper of the globe. A section of this State is soon to be opened of which very little is generally known beyond the fact that it is immensely rich in minerals. That portion of the State is enormous in size, more than equaling the area of Massachusetts; it cannot boast a single mile of railroad, and is hemmed in on all sides by the Rockies. In this mountainous country there are mines without number.

—The American Laundry Machinery Company, Cincinnati, O., recently shipped two carloads of their laundry machinery for South Africa, and are averaging about two carloads a week in European orders.

—Parties interested should write Mast, Foos & Co., Springfield, Ohio, for their handsome printed matter of their Columbia steel windmill, Buckeye hydrants and pumps, their buckeye tank pump, wire and iron fences, architectural and ornamental iron work.

—A leading English lumber trade journal calls its readers' attention to the fact that American-made front doors are much more attractive in appearance than those of the English make, and rather intimates that the American door is quite likely to become popular there. It would not be at all surprising.

De Laval Cream Separators



Immediate and absolutely complete separation of cream from milk by machinery.

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A saving of 10 to 20 per cent. in any climate, and 25 to 100 per cent. in warm countries.

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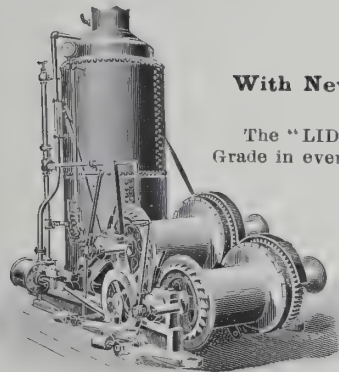
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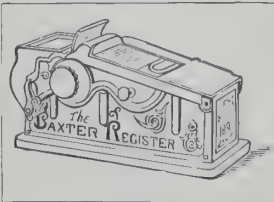
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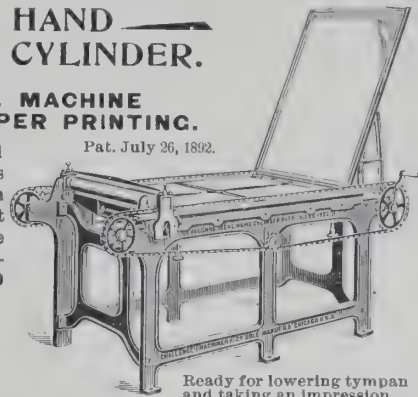
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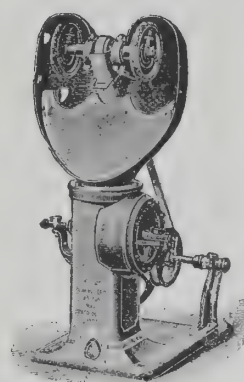
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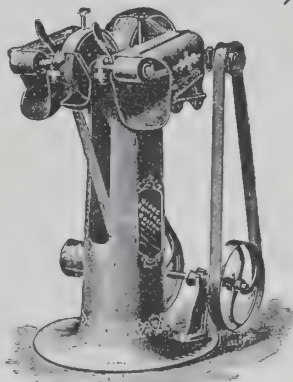
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American Enterprise in Japan.

GREAT BRITAIN apparently has another grievance against America. At least, the enterprise of manufacturers on this side of the ocean has practically driven the English out of the railroad field in Japan, and for the facts in the case the reader has only to refer to a recent report of the British Consular service.

It appears that London capitalists and manufacturers were among the first to appreciate Japan as a field for trade in railroad supplies. They sent out engineers to survey new roads, and, of course, furnished the material for them. At the start, also, they managed the lines for their apt Oriental pupils, and gave them an insight into the business. The Japanese, however, soon discovered that materials for railroad building and equipment could be easier and more cheaply obtained in America.

To cite an instance, two contracts were let out about the same time for two railroad bridges of the same dimensions—one to a British and one to an American engineer. The former took the contract at a specified sum, ordered his material from London and constructed the bridge. The latter submitted his plans, allowed the Japanese to purchase the material in America, and saved for them nearly 50 per cent. on the cost of the steel from which the bridge was built. This led to a general dismissal of English engineers throughout the empire, and, when the report referred to was written, only one was on duty in Japan.

This is a somewhat striking illustration of what may be accomplished by Yankee enterprise in foreign lands. All that is required is to study the conditions, and Great Britain can be supplanted in almost any part of the globe.—*Baltimore Herald*.

American Turbines for Japan.

FOR many years the Japanese have been buying a larger part of their machinery in England and Germany, but the recent industrial revival in the Mikado's realm has caused them to investigate other markets and it is now found that in many respects they prefer American-made machinery. As a result in one line we may mention the fact that a Dayton, Ohio, firm has shipped a train load of turbines for one large and two smaller power-generating plants in Japan.

Paper Sails.

"PAPER SAILS," says *The Railway Review*, "are meeting with considerable favor. They are considerably cheaper than canvas sails, and owing to a special treatment are made as soft, flexible and untearable as the original article. To the paper pulp is added fat, a solution of alkali silicate, glue, alum and potassium bichromate. From this by means of a paper-making machine, a fairly thick paper is produced. Two strips of this are pasted together, and by passing under considerable pressure through rollers a very thin soft sheet of paper is formed. It is then passed through a weak solution of sulphuric acid, which has the effect of converting the upper surface into a species of parchment. Washing with a solution of soda, drying and glazing follow. Care is taken to leave the edges free when the strips of paper are fastened together so that other strips may be added at the sides, thus forming a sufficient breadth of sails. To fasten the strips together a paste is used which contains the same ingredients as those added to the paper pulp, while by inserting cords of ribbon on the sides the edging of the sail is formed. There are few articles which offer a greater field for ingenuity than that of paper. One of the most singular inventions is a stove made from paper. A recent suggestion is to use the waste dye wood chips as a paper filling."

THE New York *Tribune* hints that there is a possibility of the North German Lloyd Steamship placing an order with the Messrs. Cramp for some of the new steamships which they contemplate having built. Agents of the North German Lloyd were on board the *St. Paul* on her last trip making careful examinations of her performance, so that paper says. Considering that the *St. Paul* and the *St. Louis* are exceptionally economical in the use of coal, as compared with others of the transatlantic greyhounds, and that for comfort there are no ships afloat that can compare with the American line's latest twin flyers, we sincerely hope that the rumor may materialize into a fact. It would certainly be to the advantage of the North German Lloyd, in more ways than one, we venture to suggest, to have several fast steamships built in American shipyards.

—The Star Drilling Machine Company, of Akron, Ohio, will erect two additions to its plant. One will be 36x30 and one story, the other 50x60 and two stories high. The increasing business of the company has necessitated these additions.

—A labor and time saving invention is that of Byrd C. Rockwell, of Goshen, Ind., U. S. A. It is a portable sickle grinder. A small emery wheel or disk is geared to a drive wheel which operates with a crank. The emery wheel is so bevelled from the centre that it fits between the knives and grinds two edges or faces at once.

—A large laundry plant is going up in the City of Mexico, the principal owner being Mr. Cockerton. The arrangements were made by Arthur Rodgers of St. Louis. The plant includes four washers, two extractors, one mangle, two bosom ironers, two sleeve ironers, two body ironers, one C. and C. ironer, two shirt starchers, one C. and C. starcher and other machinery.

Miscellaneous Notes.

—O. J. Faxon & Company, manufacturers, Boston, have recently made a shipment of Puritan cycles to E. H. Hitchcock, Liverpool, England.

—Among foreign shipments lately made by York business firms were 12 buckboard wagons to South America by the Martin Carriage Co. The same company shipped several vehicles to Canada.

—Advices from Vancouver, B. C., report that preliminary arrangements have been completed for a steamship line from Japan to New York, to be subsidized by the Japanese Government and established exclusively with native capital.

—C. P. Ford & Co., Rochester, N. Y., U. S. A., received an order for shoes by cable from Australia last week. Their Australian trade has shown a very gratifying increase during the past two years and they are getting many duplicate orders.

—Forty thousand acres of virgin forest in Northern Idaho will soon be turned over to the axmen of a big syndicate. It is expected that this area will yield more than 400,000,000 feet of white and yellow pine, red and white cedar, fir and tamarack.

—We read in the English laundry trade papers that though English laundries are fast improving and old methods are giving place to new, that English-made laundry machinery cannot begin to compare with the American-made article. An acknowledgment like this is so rare that it deserves reiteration.

—Edwin Dunn, Minister to Japan, says he receives many letters inquiring particularly about bicycles. He adds: "There is no such thing as a Japanese bicycle. The bicycles that people use there are all made in the United States or in Europe, and so they will continue to be. No one need have any fear of that."

—It is reported that Curtis & Curtis, Bridgeport, Conn., manufacturers of pipe-cutting machinery for hand and power, find their business this season much better than last year and that a considerable amount of it has been from abroad, they having recently shipped several machines to France, England and other foreign parts.

—The Goulds Mfg. Company, of Seneca Falls, N. Y., have issued special circulars descriptive of their "Empire" well force-pump and pumps designed for supplying oil to cutting-off and thread-cutting machines, bolt and nut machines. They also describe and illustrate a few of the notable electric pumping plants which have been installed by them.

—One of the greatest inventions ever added to the granite business, according to an exchange, is being given a test in Montpelier, Vt. The machine is for sawing granite, and if it proves satisfactory it will go down to history with the cotton gin. The cutters contain \$4,000 worth of diamonds, and the total construction cost in the neighborhood of \$10,000.

—Foreign importers who haven't seen the celluloid lacing hook made by the Tubular Rivet and Stud Company, Boston, Mass., U. S. A., should send for a sample card of them. The celluloid studs are shown in the different shades—white, tan, red and black, all fast colors. The good points of the "Celluloid" are its smooth, round button head, workmanlike finish in every detail and its solidity.

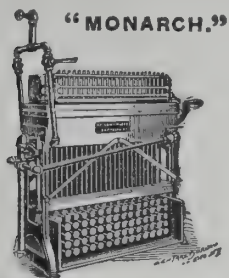
—The New York *Herald* says: "American emery wheels are being sent to Finland, and, in fact, all over Europe, where they are recognized as better than any others. Foreign manufacturers are looking over a great deal of American machinery with a view of buying it to use. Our agricultural implements, with a little adaptation to local needs, are driving out foreign makes. Even England is compelled to buy a good deal from us."

—Bicycles are as much a rage in England and on the Continent as here. In London the Thames is practically deserted by boats. One conservative English newspaper has started a cyclist's column, and it declares the bicycle interests more people than do art or literature. It lays stress on the superiority of American models in wheels, and warns British makers that unless they reduce the weight of their wheels and improve their saddles they will lose the British market to Americans.

—The Hogan Mfg. Co. recently organized in Erie, Pa., U. S. A., for the purpose of manufacturing wire nails of every size, is now building a factory 60x110 feet, which, as soon as completed, will be filled with the latest improved nail making machinery. As American manufacturers are now making wire nails cheaper than they can be made in England or any other country, we presume that the Hogan Mfg. Co. will secure a share of the increasing export orders for this class of goods.

—A labor-saving invention upon which John Hauenstein, of New Ulm, Minn., has spent more or less time for 20 years past, has just been recognized by letters patent. The device relates to the manufacture of barrels and other cooperage. It takes the skeleton barrel with the two top hoops on, puts it in the steam tub, and while steaming presses the lower end of the barrel together and slips the lower hoop on. This not only saves the labor of several men, but prevents the breaking of staves and makes a more uniform and perfect barrel.

—The Enterprise Manufacturing Company, of Philadelphia, Pa., has just received a medal and diploma from the World's Fair Executive Committee of Awards on a number of specialties. That on meat chopper is as follows: "For excellence of design and efficiency." On measuring faucet: "For the ingenious manner in which the faucet is made to act as a measure for thick liquids, such as molasses and varnish." On fruit, wine and jelly press: "For excellence of design and efficiency." On coffee mill: "For quick method of opening and simple method of adjusting grinders, easy working and fine grinding, rapidity of action and variety of sizes."



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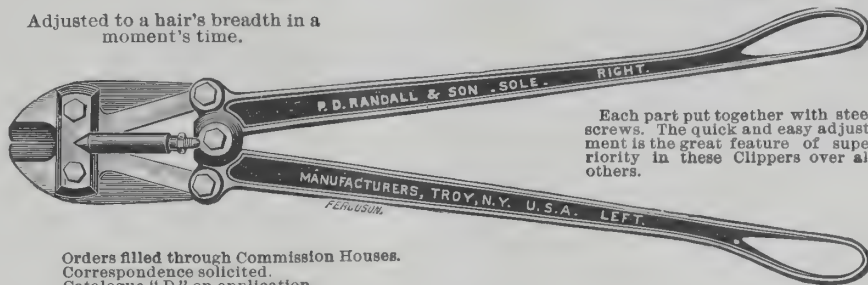
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No weak spots in the whole Clipper. Knives tempered in the most careful manner. Every Clipper thoroughly tested before it leaves our factory. No. 3 cuts $\frac{3}{8}$ inch or less. No. 4, $\frac{1}{2}$ inch or less. No. 5, $\frac{3}{4}$ inch or less.

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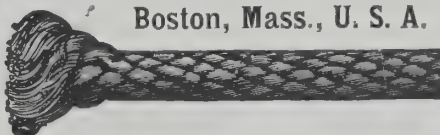


Each part put together with steel screws. The quick and easy adjustment is the great feature of superiority in these Clippers over all others.

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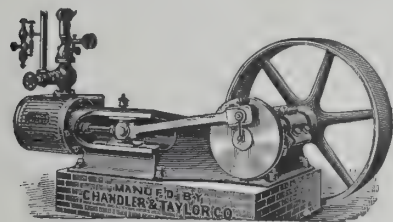
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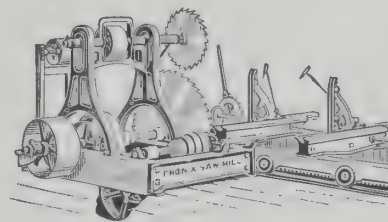
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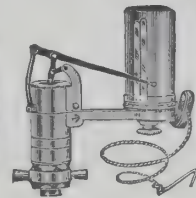
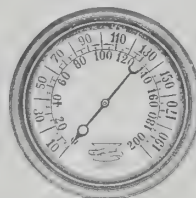
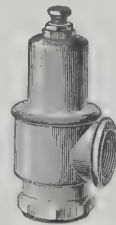
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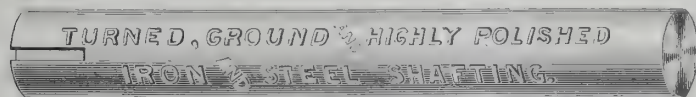
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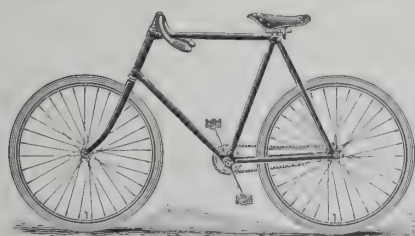
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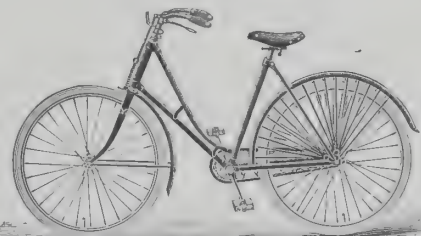
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It is a family friend that households should never be without.

If administered according to directions it never fails to cure. Harmless if taken internally.

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CURE.**Guaranteed to Cure.
Unfailing Certainty.

50¢ AND \$1.00 PER BOTTLE

Manufactured by
THOMPSON DIPHTHERIA CURE CO.
WILLIAMSPORT, PA., U. S. A.

FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry)...	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	21 1/4 inches.
Arabe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1.111 pounds.	do.....	Uruguay (double)...	7.776 bushels.	do.....	China, Japan and Sumatra.	133 1/2 pounds.
Arroba (dry)...	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single)...	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	Fanega (liquid)	Spain.....	16 gallons.	do.....	(hemp).	140 pounds.
do.....	Portugal.....	32.38 pounds.	Feddan.....	Egypt.....	1.03 acres.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Spain.....	25.38 pounds.	Frail (raisins)...	Spain.....	50 pounds.	do.....	Castilian.....	0.91407 foot.
do.....	Venezuela.....	25.4024 pounds.	Frasco.....	Argentine Republic	2.5006 quarts.	Pik.....	Turkey.....	27.9 inches.
Arroba (liquid).	Cuba, Spain and Venezuela.	4.263 gallons.	do.....	Mexico.....	2.5 quarts.	Pood.....	Russia.....	36.112 pounds.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	Pund (pound)...	Denmark, Sweden...	1.102 pounds.
Arshine (qu're)	do.....	5.44 square feet.	Garnice.....	Russian Poland...	0.88 gallon.	Quarter.....	Great Britain.....	8.252 bushels.
Artel.....	Morocco.....	1 1/2 pounds.	Gram.....	Metric.....	15.432 grains.	do.....	London (coal)...	36 bushels.
Baril.....	Argentine Republic and Mexico.	20.0787 gallons.	Hectare.....	do.....	2.411 acres.	Quintal.....	Argentine Republic	101.42 pounds.
Barrel.....	Malta (customs)...	11.4 gallons.	Dry.....	do.....	2.838 bushels.	do.....	Brazil.....	130.06 pounds.
do.....	Spain (raisins)...	100 pounds.	Liquid.....	do.....	26.417 gallons.	do.....	Castile, Chile, Mex- ico and Peru.	101.61 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Joch.....	Austria-Hungary...	1.422 acres.	do.....	Greece.....	123.2 pounds.
Bongkal.....	India.....	832 grains.	Ken.....	Japan.....	4 yards.	do.....	Newfoundland (fish)	112 pounds.
Bonw.....	Sumatra.....	7,066.5 qu're metres.	Kilogram (kilo)	Metric.....	2.2046 pounds.	do.....	Paraguay.....	100 pounds.
Bu.....	Japan.....	0.1 inch.	Kilometre.....	do.....	0.621376 mile.	do.....	Syria.....	125 pounds.
Butt (wine)...	Spain.....	140 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Metric.....	220.46 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Kota.....	Japan.....	5.13 bushels.	Rottle.....	Palentine.....	6 pounds.
Candy.....	India (Bombay)...	529 pounds.	Korree.....	Russia.....	3.5 bushels.	do.....	Syria.....	5 1/2 pounds.
do.....	India (Madras)...	500 pounds.	Last.....	Belgium, Holland...	85.134 bushels.	Sagen.....	Russia.....	7 feet.
Cantar.....	Morocco.....	113 pounds.	do.....	England (dry malt)...	82.52 bushels.	Salm.....	Malta.....	490 pounds.
do.....	Syria (Damasus)...	575 pounds.	do.....	Germany.....	2 metric tons (4,480 pounds.)	Se.....	Japan.....	3.6 feet.
do.....	Turkey.....	124.7036 pounds.	do.....	Prussia.....	112.29 bushels.	Seer.....	India.....	1 pound 13 ounces.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Russian Poland...	113 1/2 bushels.	Shaku.....	Japan.....	10 inches.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Spain (salt).....	4.760 pounds.	Sho.....	do.....	1.6 quarts.
Catty.....	China.....	1.333 1/2 (1 1/6) pounds.	League (land)...	Paraguay.....	4.633 acres.	Standard (St. Petersburg)...	Lumber measure...	165 cubic feet.
do.....	Japan.....	1.31 pounds.	Li.....	China.....	2.115 feet.	Stone.....	British.....	14 pounds.
do.....	Java, Siam, Malacca	1.35 pounds.	Libra (pound)...	Castilian.....	7.100 grains (troy).	Suerte.....	Uruguay.....	2,700 cuadras (see cua- dra).
do.....	Sumatra.....	2.12 pounds.	do.....	Argentine Republic	1.0127 pounds.	Tael.....	Cochin China.....	590.75 grains (troy).
Cen'aro.....	Central America...	4.2631 gallons.	do.....	Central America...	1.043 pounds.	Tan.....	Japan.....	0.25 acre.
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Chile.....	1.014 pounds.	To.....	do.....	2 pecks.
do.....	Darmstadt.....	110.24 pounds.	do.....	Cuba.....	1.0161 pounds.	Ton.....	Space measure...	40 cubic feet.
do.....	Denmark, Norway...	110.11 pounds.	do.....	Mexico.....	1.01465 pounds.	Tonde (cereals)...	Denmark.....	3.94783 bushels.
do.....	Nuremberg.....	112.43 pounds.	do.....	Peru.....	1.0143 pounds.	Tondeland.....	do.....	1.36 acres.
do.....	Prussia.....	113.44 pounds.	do.....	Portugal.....	1.011 pounds.	Tsubo.....	Japan.....	6 feet square.
do.....	Sweden.....	93.7 pounds.	do.....	Uruguay.....	1.0143 pounds.	Tsun.....	China.....	1.41 inches.
do.....	Vienna.....	123.5 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tunna.....	Sweden.....	4.5 bushels.
do.....	Zollverein.....	110.24 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tunnland.....	do.....	1.22 acres.
do.....	Double or metric...	220.46 pounds.	Liv're (pound)...	Greece.....	1.1 pounds.	Vara.....	Argentine Republic	34.1208 inches.
Chih.....	China.....	14 inches.	do.....	Guiana.....	1.0791 pounds.	do.....	Castile.....	0.914117 yard.
Coyan.....	Sarawak.....	3,098 pounds.	Load.....	England (timber)...	Squ're, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	do.....	Central America...	38.874 inches.
do.....	Siam (Koyan)...	2,667 pounds.	Manzana.....	Costa Rica.....	1 1/2 acres.	do.....	Chile and Peru....	33.367 inches.
Cuadra.....	Argentine Republic	4.2 acres.	Marc.....	Bolivia.....	0.507 pound.	do.....	Cuba.....	33.384 inches.
do.....	Paraguay.....	78.9 yards.	Maund.....	India.....	82 1/2 pounds.	do.....	Curacao.....	33.375 incl. es.
do.....	Paraguay (square)...	8.077 square feet.	Metre.....	Metric.....	39.37 inches.	do.....	Mexico.....	33 inches.
do.....	Uruguay.....	Nearly 2 acres.	Mil.....	Denmark.....	4.61 miles.	do.....	Paraguay.....	34 inches.
Cubic metre...	Metric.....	35.3 cubic feet.	do.....	Denmark (geograph- ical).....	4.61 miles.	do.....	Venezuela.....	33.384 incl. es.
Cwt. (hundred- weight).....	British.....	112 pounds.	Morgen.....	Prussia.....	0.63 acre.	Vedro.....	Russia.....	2.707 gallons.
Dessiatine.....	Russia.....	2,6997 acres.	Oke.....	Egypt.....	2.7225 pounds.	Verges.....	Isle of Jersey.....	71.1 square rods.
do.....	Spain.....	1,599 bushels.	do.....	Greece.....	2.84 pounds.	Verst.....	Russia.....	0.663 mile.
Drachme.....	Greece.....	Half ounce.	do.....	Hungary.....	3.0817 pounds.	Vlocka.....	Russian Poland....	41.98 acres.
Dun.....	Japan.....	1 inch.						
Egyptian wts. and measures.	(See CONSULAR RE- PORTS No. 144.)							
Fanega (dry)...	Central America...	1.5745 bushels.						

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes - ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.

Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.)
Metre equals 39.37 inches.
Decametre (10 metres) equals 393.7 inches.
Hectometre (100 metres) equals 328 feet 10 inches.
Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10 inches).
Myriametre (10,000 metres) equals 6.2137 miles.

Metric surface measures.

Centare (1 square metre) equals 1.550 square inches.
Are (100 square metres) equals 119.6 square yards.
Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.

Length.	Surface.	Capacity.	Weight.	Notation.
Myriametre.....			Metric ton.....	1,000,000
Kilometre.....			Quintal.....	100,000
Hectometre.....			Myriagram.....	10,000
Decametre.....			Kilogram.....	1,000
METRE.....			Hectogram.....	100
Decimetre.....			Decagram.....	10
Centimetre.....			GRAM.....	1
Millimetre.....			Decigram.....	0.1
			Centigram.....	0.01
			Milligram.....	0.001

EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.

1 kilometre.....	0.62137 mile.	1 mile.....	1.60935 kilometres.
1 metre.....	3.28083 feet.	1 yard.....	0.914402 metre.
1 centimetre.....	0.3937 inch.	1 foot.....	0.304801 metre.
1 hectare.....	2.471 acres.	1 inch.....	25.4001 millimetres.
1 are.....	119.6 square yards.	1 square mile.....	2.59 square kilometres.
1 metric ton.....	2,204.62 pounds.	1 acre.....	0.4047 Hectare.
1 kilogram.....	2.20462 pounds.	1 square foot.....	9.29 square decimetres.
1 gram.....	15.43236 grains.	1 pound.....	0.453 9 kilogram.
1 hectolitre.....	2.8377 bushels.	1 grain.....	64.7989 milligrams.
1 hectolitre.....	26.417 gallons.	1 bushel.....	0.35239 hectolitre.
1 litre.....	1.0567 quarts.	1 gallon.....	3.78543 litres.
1 stere.....	1.308 cubic yards.	1 cubic foot.....	0.02832 cubic metre.

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.
Millimetres $\div 25.4$ = inches.
Centimetres $\times 0.3937$ = inches.
Centimetres $\div 2.54$ = inches.
Metres $\times 39.37$ = inches. (Act Congress.)
Metres $\times 3.281$ = feet.
Metres $\times 1.094$ = yards.
Kilometres $\times 0.621$ = miles.
Kilometres $\times 1.6093$ = miles.
Kilometres $\times 3.2807$ = feet.
Square millimetres $\times 0.0155$ = sq. inches.
Square millimetres $\div 645.16$ = sq. inches.
Square centimetres $\times 0.155$ = sq. inches.

Square centimetres $\div 6.451$ = sq. inches.
Square metres $\times 10.764$ = sq. feet.
Square kilometres $\times 247.1$ = acres.
Hectare $\times 2.471$ = acres.
Cubic centimetres = 16.383 = cubic inches.
Cubic centimetres $\div 3.69$ = fl. drams.
Cubic centimetres $\div 29.57$ = fluid oz. (U. S. P.)
Cubic metres $\times 35.315$ = cubic feet.
Cubic metres $\times 1.358$ = cubic yards.
Cubic metres $\times 264.2$ = gallons (231 cu. in.)
Litres $\times 61.022$ = cubic in. (Act Congress.)
Litres $\times 33.81$ = fluid ounces (U. S. Phar.)
Litres $\times 0.2642$ = gallons (231 cu. in.)
Litres $\div 3.78$ = gallons (231 cu. in.)

Litres $\div 28.316$ = cubic feet.
Hectolitres $\times 3.531$ = cubic feet.
Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)
Hectolitres $\times 0.131$ = cubic yards.
Hectolitres $\times 26.42$ = gallons (231 cu. in.)
Grams $\times 15.432$ = grains. (Act Congress.)
Grams $\div 981$ = dynes.
Grams (water) $\div 29.57$ = fluid ounces.
Grams $\div 35.23$ = ounces avoirdupois.
Grams per cu. cent. $\div 27.7$ = lbs. per cu. in.
Joule $\times 0.7373$ = foot pounds.
Kilograms $\times 2.2046$ = pounds.
Kilograms $\times 35.3$ = ounces avoirdupois.
Kilograms $\div 1,102.3$ = tons (2,000 lbs.)

Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Kilogram-metres $\times 7.233$ = foot lbs.
Kilo per metre $\times 0.672$ = lbs. per foot.
Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Kilo per cheval $\times 2.235$ = lbs. per H. P.
Kilowatts $\times 1.34$ = horse-power.
Watts $\div 746$ = horse-power.
Watts $\div 0.7373$ = foot pounds per second.
Calorie $\times 3.968$ = B. T. U.
Cheval vapeur $\times 0.9863$ = horse-power.
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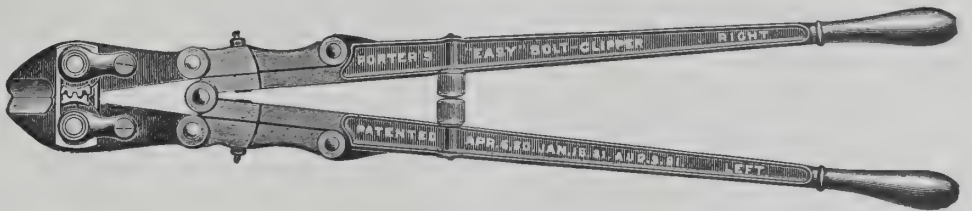
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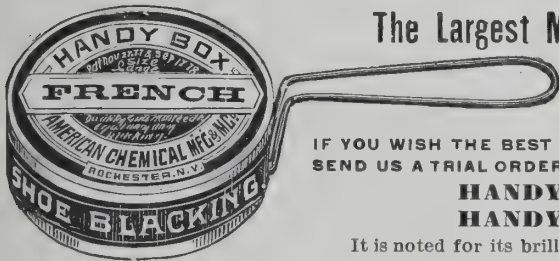
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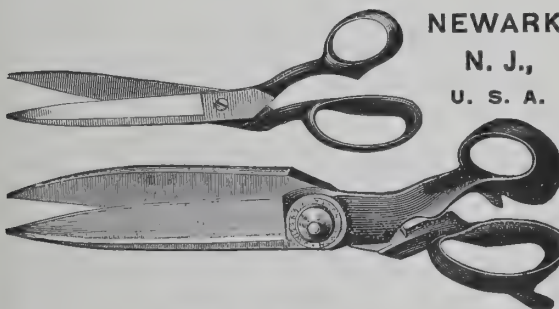
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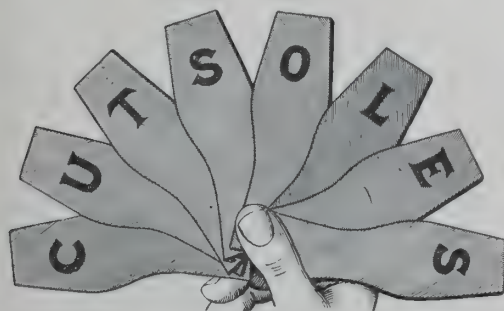
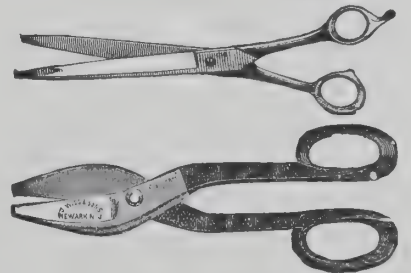
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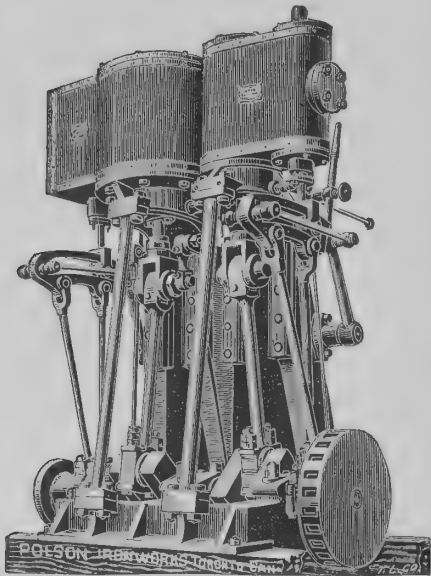
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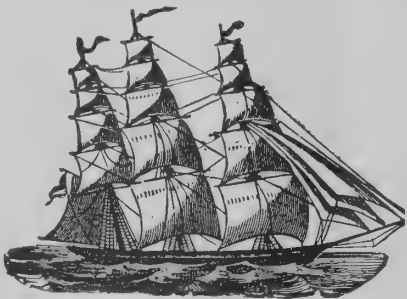
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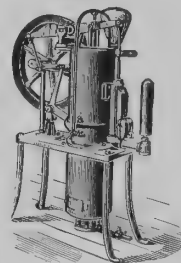
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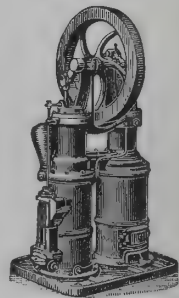
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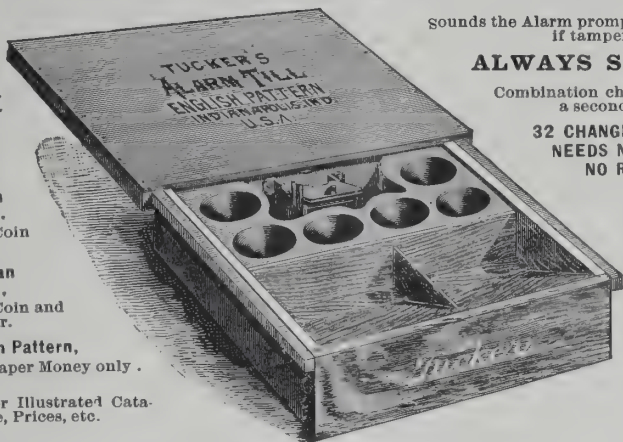
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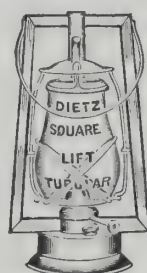
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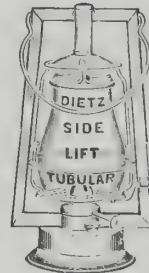
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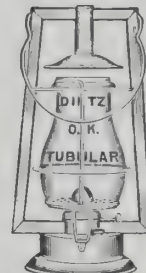
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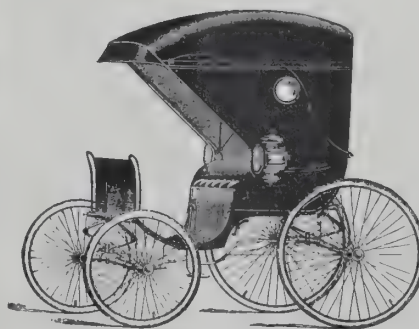
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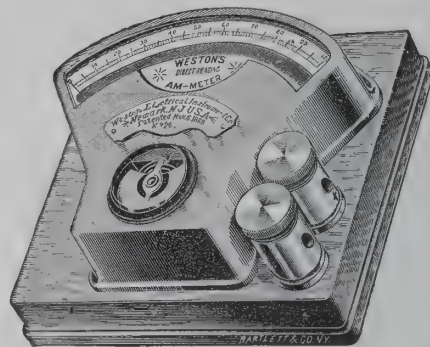
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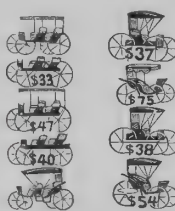
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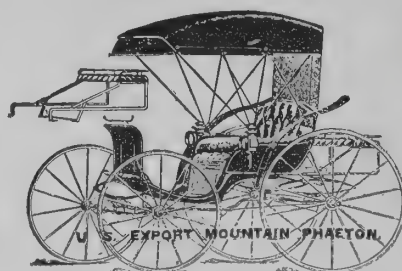
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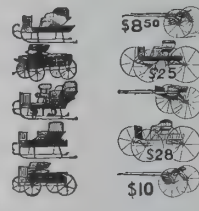


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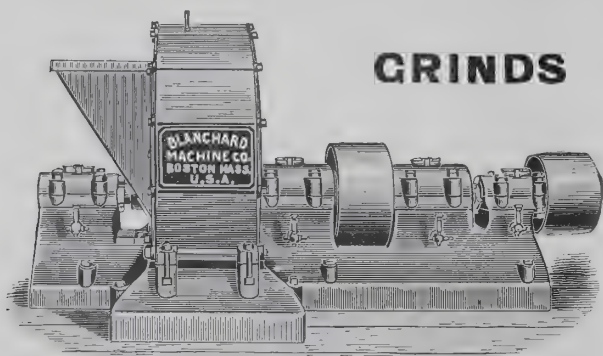
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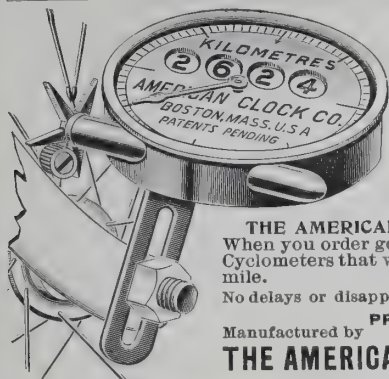
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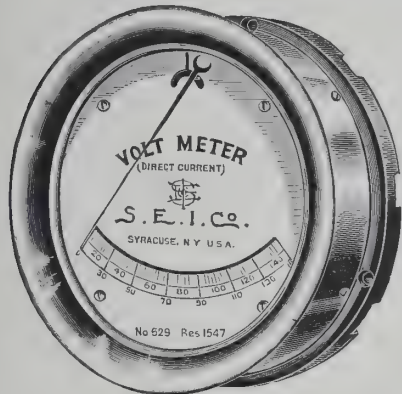
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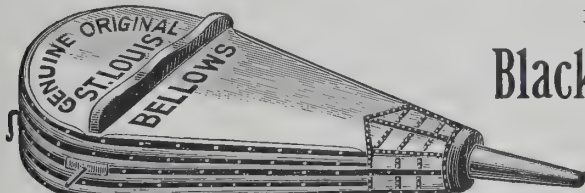
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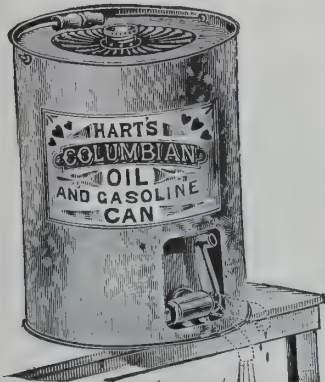
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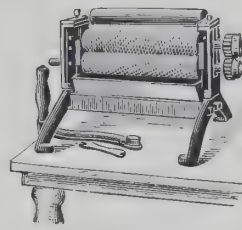


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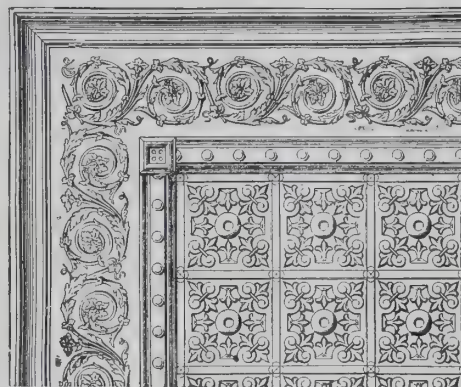
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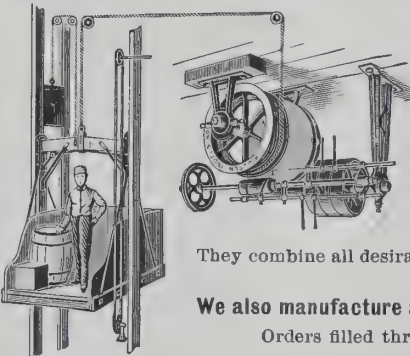
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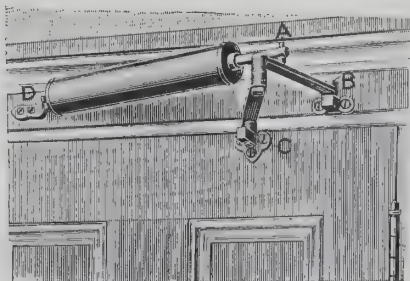
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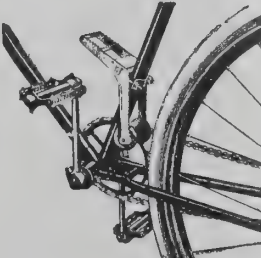
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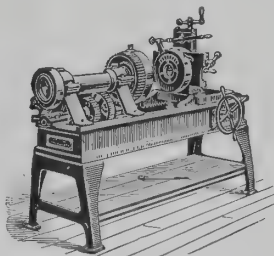
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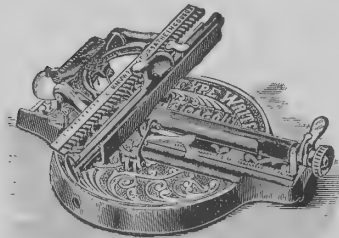
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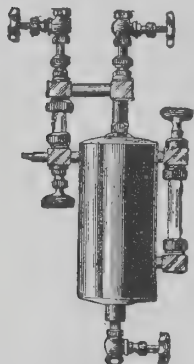


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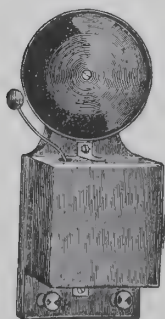
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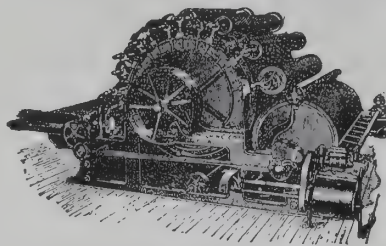
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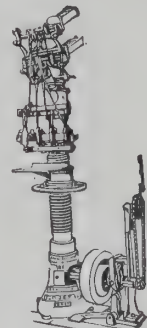
Superior Box Nailer,

Built in the Most Substantial Manner.

SIMPLE. Can be used for DURABLE.

FRAMING, BOTTOMING,

Or Any Other Kind of Work.



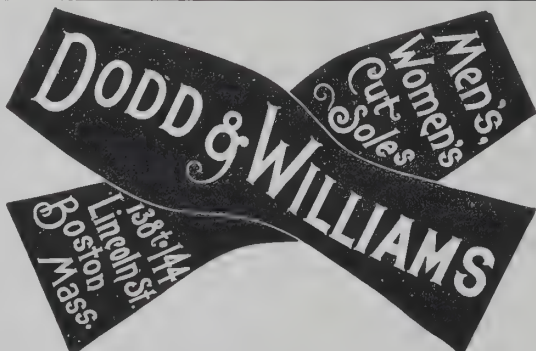
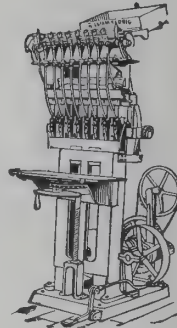
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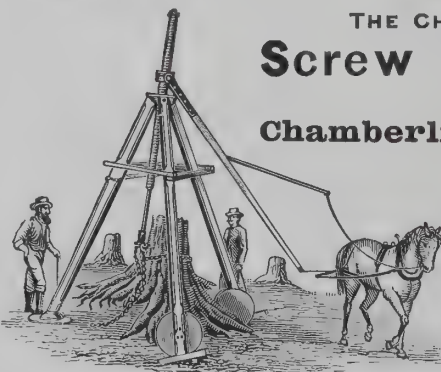
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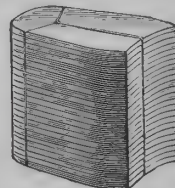
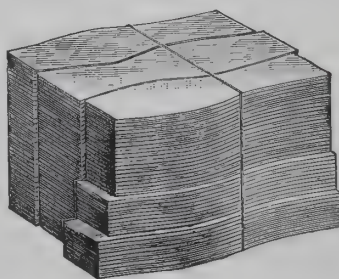
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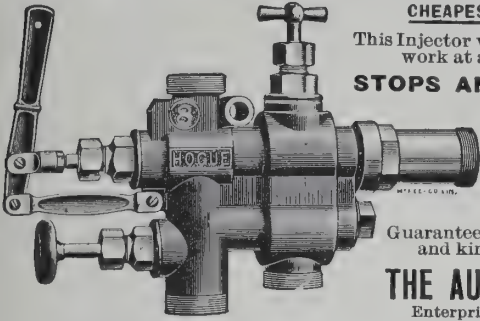
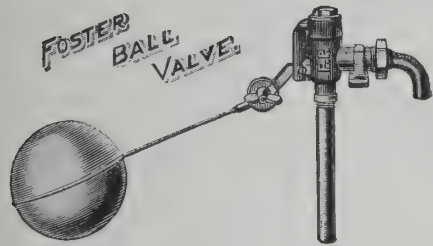
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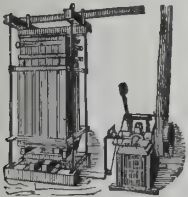
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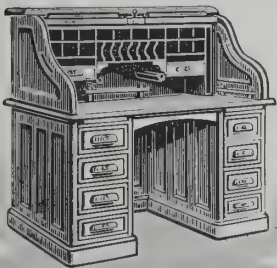
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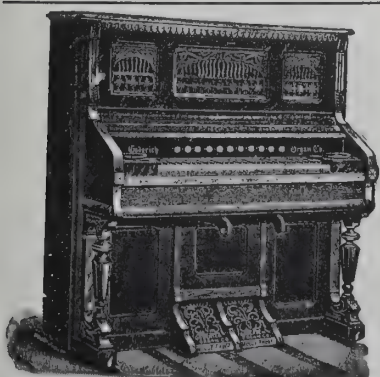
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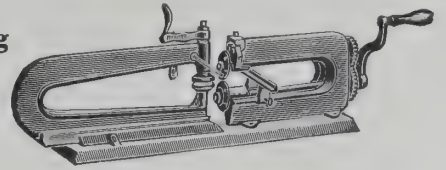
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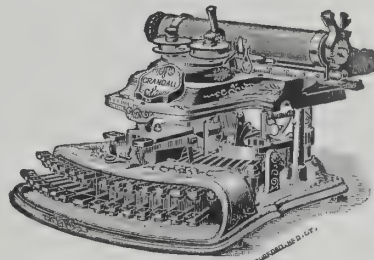
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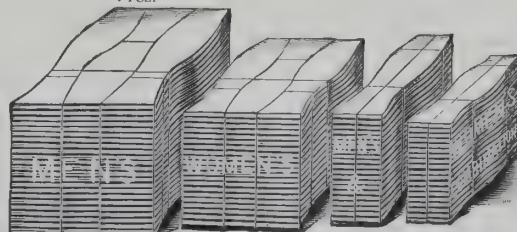
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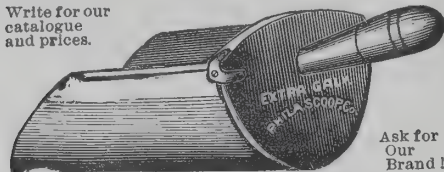
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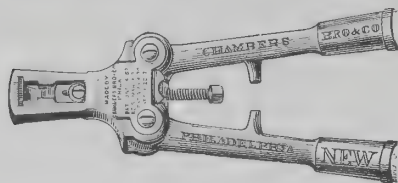
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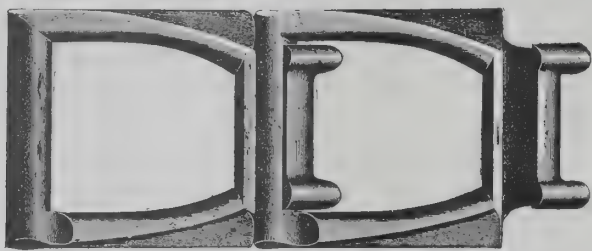
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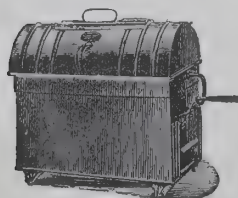
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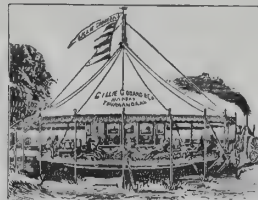


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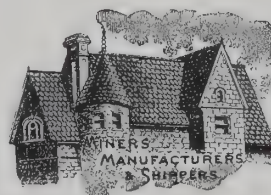
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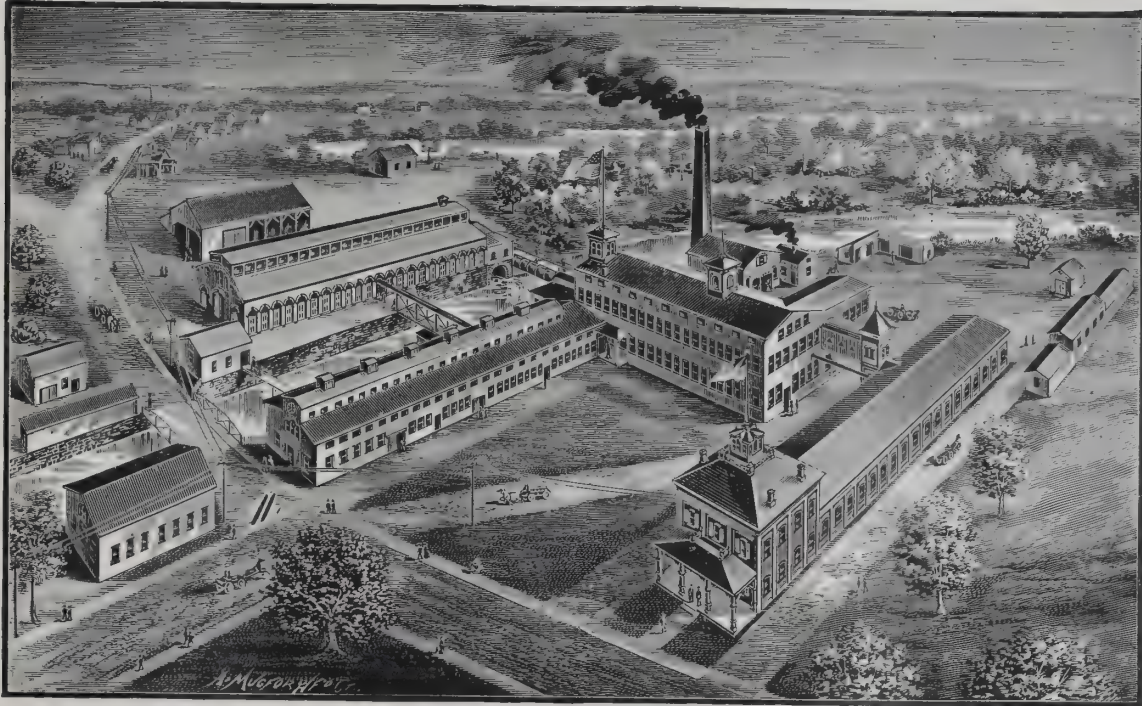
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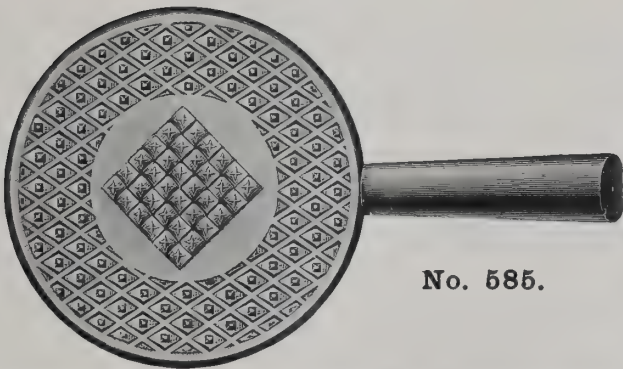
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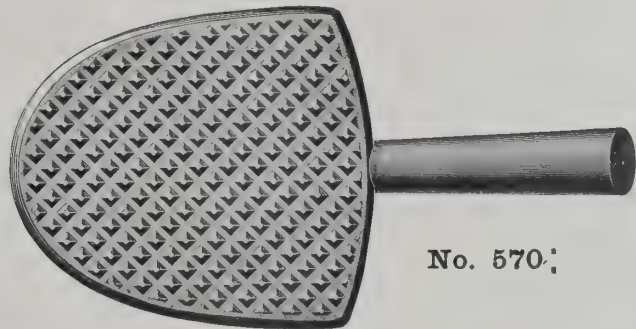
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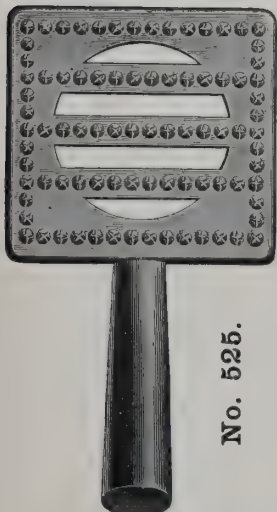
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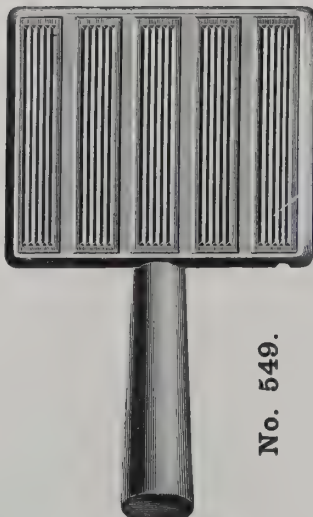
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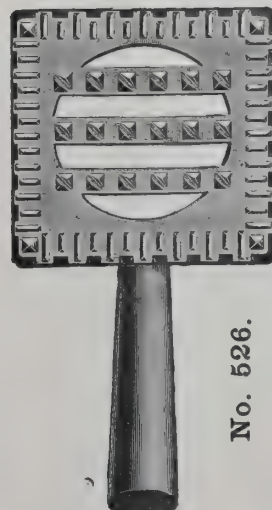
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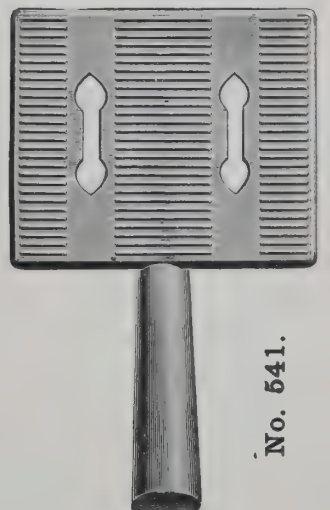
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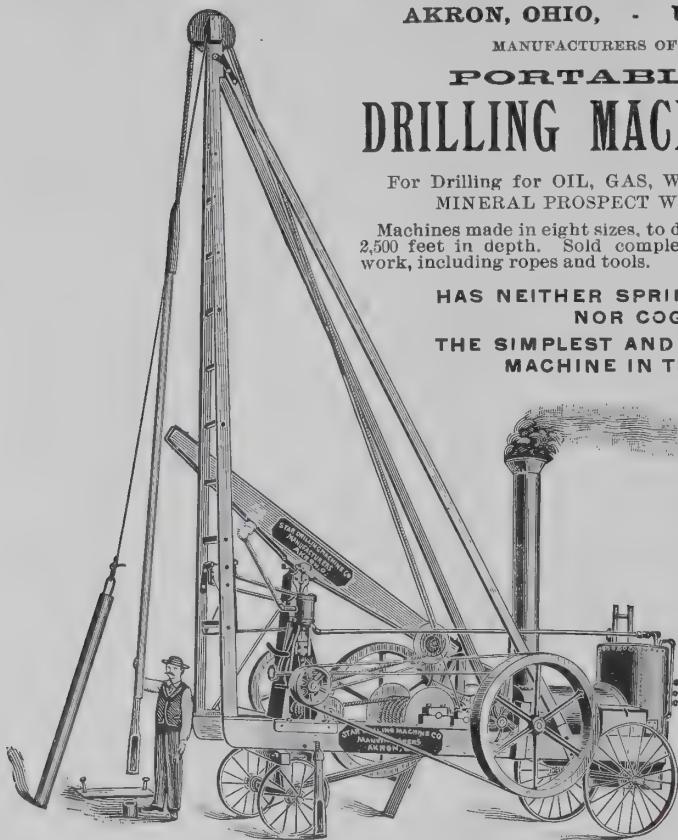
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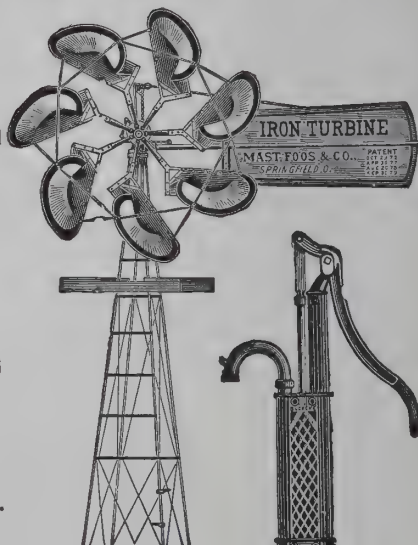
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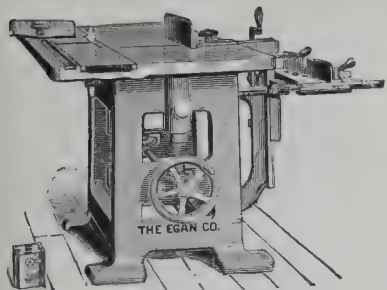
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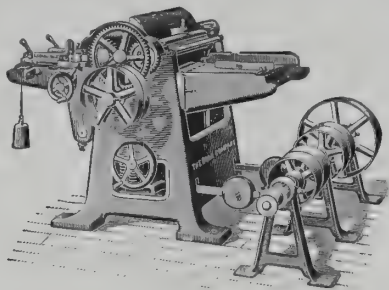
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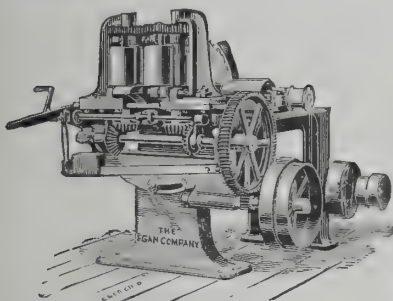
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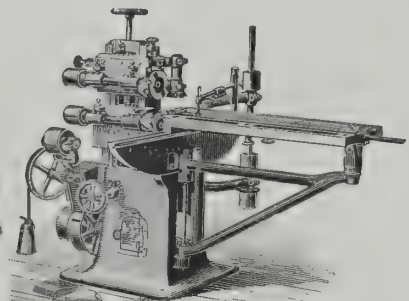
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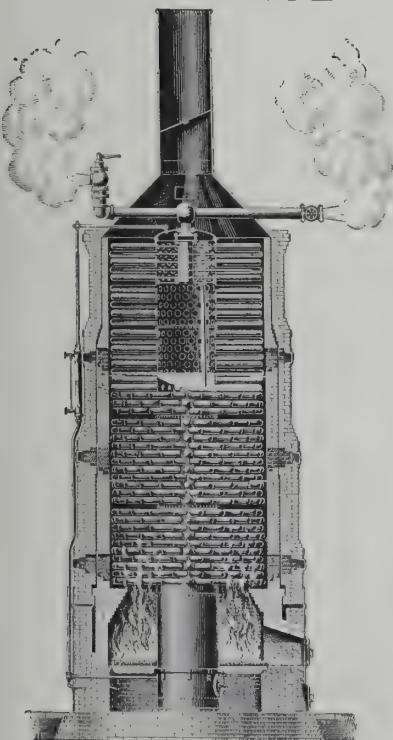


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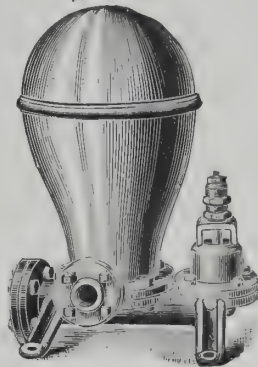
Fig. 345 1/4.

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FIG. 345 1/4. SIZES, PRICES, ETC.

Size.	Supply per minute to operate ram.	Calibre of Pipes— Drive.	Dis.	Approximate Weight.	*With L. Valve
No. 2.....	1 to 2 gallons.....	3/4 inch.....	1/2 inch.....	28 lbs.....	\$9.00
No. 3.....	2 " 4 ".....	1 ".....	1/2 ".....	35 ".....	11.00
No. 4.....	8 " 7 ".....	1 1/4 ".....	3/4 ".....	45 ".....	14.00
No. 5.....	6 " 10 ".....	2 ".....	1 ".....	50 ".....	22.00

*Leather Valve under Air Chamber.

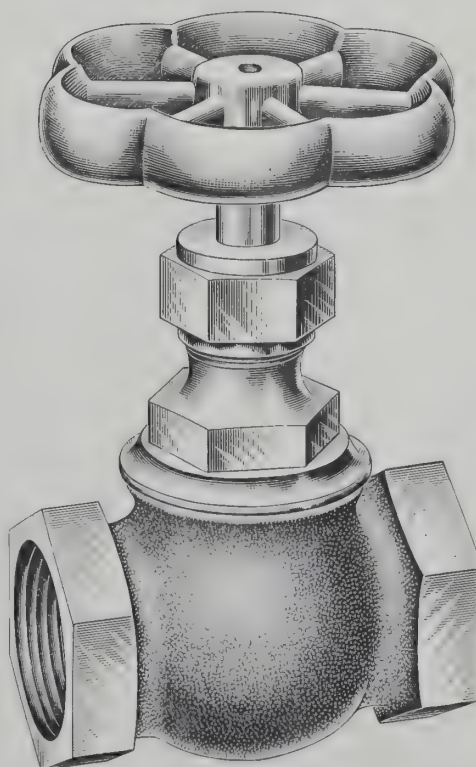
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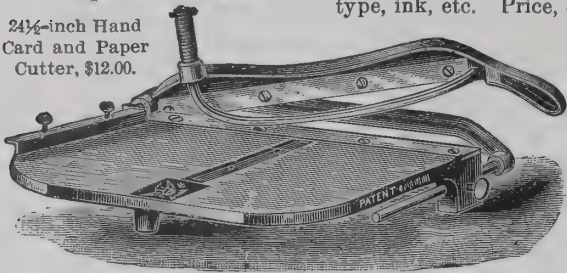
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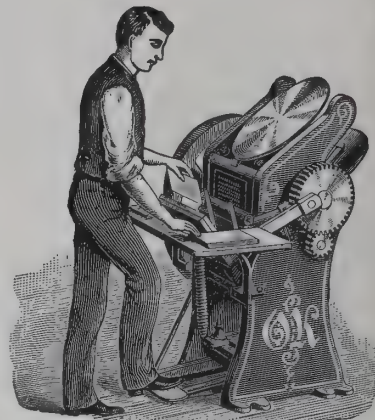
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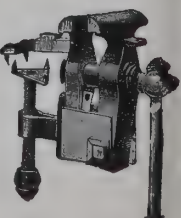
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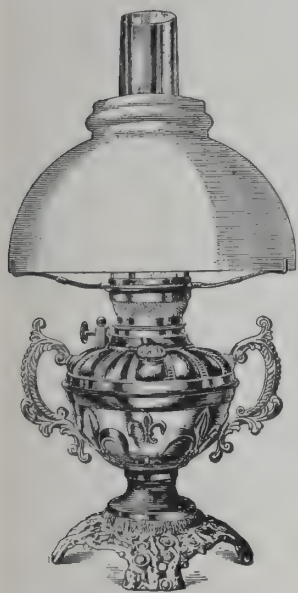


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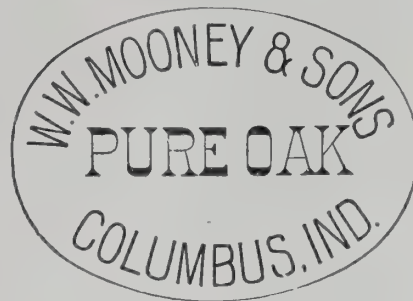
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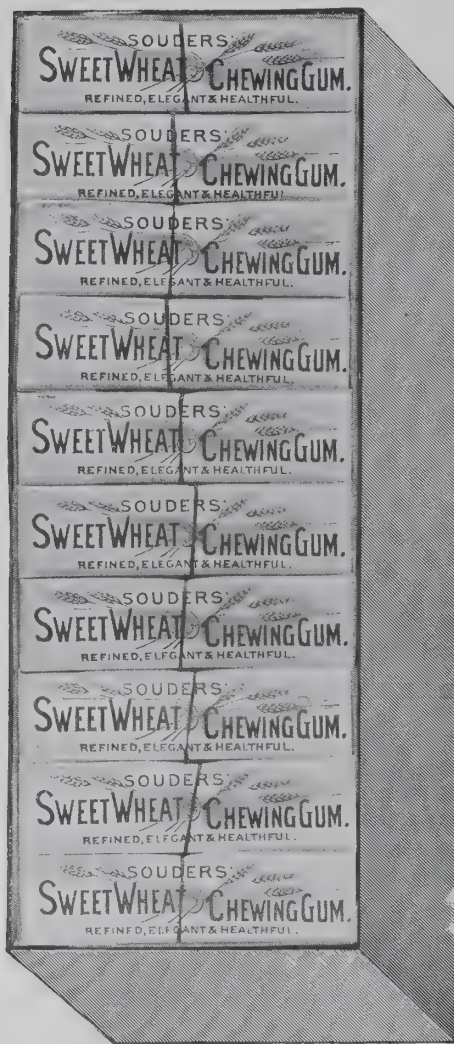
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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	Diago, Frederico C..... —
American Lamp & Brass Co.—Lamps.. 8	Dietz, R. E. Co.—Lamps..... 31
American Clock Co.—Cyclometers.... 43	Diamond Hardware Co.—Stove Polishing Mitten..... 33
American Writing Machine Co.—Calligraph..... 15	Divine Bros.—Buffing Wheels..... 46
Anderson & Co., Magnus—Exporters and Importers..... 43	Donegan & Swift—Engines, Injectors, etc..... 47
Armitage-Herschell Co.—Steam Riding Gallery..... 44	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 37
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Doig, W. S.—Box Nailing Machines.... 44
Ayer, J. C. Co.—Patent Medicines..... 25	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc.... 37
Ball & Co., Dayton—Shoe Lasts..... 40	Douglas, W. & B.—Pumps, etc..... 15
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Dry Kalsomine & Fresco Paint Works. 23
Barnett Co., G. & H.—Files..... 21	Eagle Cotton Gin Co.—Cotton Gins.... 33
Baxter, Schenkelberger & Co.—Cut Soles..... 33	Eclipse Cement & Blacking Co..... 37
Bay State Cut Sole Co..... 44	Eco Magnetic Clock Co.—Electric Clocks..... 46
Beacon Lamp Co.—X-Ray Tubes and Incandescent Lamps..... 31	Electric Emery Wheel Co..... 46
Bellis Cycle Co..... 40	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Bend-diet Mfg. Co., M. S.—Silver Plated Ware..... 41	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Black Mfg. Co.—Bicycles..... 31	Faxon & Co.—O. J. Bicycles..... 23
Blanchard Machine Co.—Disintegrators 31	Flagg Mfg. Co.—Shoe Machinery..... 35
Boligiano Co., John—Water Motor and Fan..... 43	Fulton Iron Works—Sugar Cane Mills 26
Brigham & Co., F. L.—Shoes..... 43	Fulton Stamp Works..... 44
Brown & Co., B. F.—Shoe Dressing.... 41	Furbush & Son Machine Co., M. A.... 44
Buffalo Cycle Co.—Bicycles..... 39	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 25
Buffalo Portable Steel House Co..... 46	General Electric Co.—Electrical Machinery..... 16
Burgess, Edward A.—Box Nailing and Trimming Machines..... 46	Gernert Bros. Lumber Co.—Pressed Wood Ornaments..... 39
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 45	Gillie, Goddard & Co.—Carousels.... 46
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 35	Globe Buffer Co.—Shoe Machinery.... 35
Chamberlin Mfg. Co.—Stump Pullers.. 40	Goderich Organ Co.—Organs, Stools, etc..... 45
Chambers Bros. Co.—Bolt Clippers.... 46	Goubert Mfg. Co..... 16
Chandler & Taylor Co.—Steam Engines and Boilers..... 59	Gould Packing Co.—Steam and Water Packing..... 23
Chicago Car Seal and Mfg. Co..... 46	Goulds Mfg. Co.—Pumps of all kinds.. 5
Chicago Metal Stamping Co..... —	Gout Mfg. Co., David D. A..... 43
Columbus Phaeton Co..... 42	Green Bros.—Watchmakers' and Jewelers' Tools and Supplies..... 6
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 42	Hancock Inspirator Co.—Boiler Feeders Harrington & King Perforating Co.—Mining Screens..... 25
Cornell & Co., F. H.—Boiler Oil Injector 44	Hart Mfg. Co.—Faucet Can..... 43
Crandall Machine Co.—Typewriters.... 44	Hartshorn Co., Stewart—Shade Rollers 2
Crosby & Co., C.—Peanut Roasters.... 46	Hastings & McIntosh Truss Co..... 33
Cretors Steam Gauge and Valve Co.—Safety and Water Valves..... 37	Hauthaway, C. L. & Sons—Shoe Dressing..... 21
Cumberland Iron & Steel Shafting Co. 39	Hay & Willits Mfg. Co.—Bicycles..... 35
Deane Steam Pump Co.—Steam Pumps 37	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 5
Dederick, P. K. & Co.—Agricultural Implements..... 45	Hazelton Boiler Co..... 5
Densmore Typewriter Co..... 33	Heller & Bros.—Files, Rasps, etc..... 35
De la Balze Hermanos..... 45	Henderson & Co., C. H.—Cut Soles.. 39
De Lamater Iron Works—Hot-Air Pumping Engines..... 25	Holmes & Edwards Silver Co.—Spoons and Forks..... 6
De Laval Separator Co.—Cream Separators..... 35	Horrocks Desk Co..... 45
	Houchin & Huber—Soap and Candle Machinery..... 39

PAGE	PAGE
Hough Cash Recorder Co..... 23	Root Co., A. I.—Beekeepers' Supplies.. 43
Huntley Mfg. Co.—Flour Mill Machinery..... 29	Royal Remedy & Extract Co.—Sweet Wheat Chewing Gum..... 8
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 43	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 21
James & Co., George—Soles, Taps, Heels, etc..... 40	S. E. I. Co.—Voltmeters & Ammeters.. 45
Jeffrey Mfg. Co.—Detachable Chain Belting..... 45	Samson Cordage Works—Cords of all kinds..... 37
Jenkins Bros.—Packings..... 31, 33	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Kelsey & Co.—Printing Presses..... 6	Savage Repeating Arms Co.—Rifles.... 48
Keystone Mfg. Co.—Agricultural Implements..... 26	Schamlandian, D..... —
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Schoellhorn Co., Wm.—Shears and Scissors..... 23
Layman Pneumatic Boat and Sporting Goods Co..... 42	Schrader's Son, A.—Diving Apparatus. 46
Lefel, Jas. & Co.—Water Wheels and Steam Engines..... 16	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
Lidgerwood Mfg. Co.—Hoisting Engines 35	Silver Lake Co.—Braided Cordage..... 39
Marston & Co., J. M.—Foot and Hand Power Saws..... 35	Simonds Mfg. Co.—Saws..... 35
Martin & Co., W. E.—Shoe Dressing.... —	Smith & Co., H. D.—Carriage Hardware. 3
Mast, Foos & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 4	Standard Hammock Mills..... 46
McCammon Piano Co..... 42	Standard Tool Co.—Twist Drills, etc.. 23
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Stanley Works, The—Brackets..... 21
Monarch Cycle Co.—Bicycles..... 7	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 4
Mooney & Sons, W. W.—Tanners and Curriers..... 7	St. Joseph Pump Mfg. Co.—Water Elevator..... 25
Morris European and American Express Co..... 45	Stieltjes & Co., F.—Importers..... 46
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 42	Stubbs' Mercantile Agency..... 41
Myers, S. F. & Co.—Jewelry of all kinds 6	Sturtevant Co., B. F.—Pressure Blowers 47
National Meter Co.—Water Meters.... 19	Sweinhardt Co., V. H.—Combination Locks..... 42
National Starch Mfg. Co.—Maizena.... 29	Tallcot & Co., W. E.—Brick Machinery 46
New Jersey Paint Works—Copper Paint, etc..... 25	Tanite Co., The—Emery Wheels, Whetstones, etc..... 48
New Process Twist Drill Co..... 23	Tarr, James H.—Copper Paint..... 41
New York City Peanut Roaster Works 46	Thompson, A. R.—Tuyere Irons..... 46
Nicholson File Co.—Files..... 21	Thompson Diphtheria Cure Co..... 40
Norman & Evans—Steam Merry-go-rounds..... 46	Thomson Meter Co.—Water Meters.... 48
Odell Typewriter Co.—Typewriters.... 44	Thresher Electric Co.—Electrical Machinery..... 15
Osborne & Co., C. S.—Saddle and Harness Tools..... 46	Trilby Shoe Polish Mfg. Co..... 4
Parke & C., John Y.—Bicycle Brake... 43	Tubular Rivet & Stud Co..... 47
Parkhurst Bros. & Co.—Elevators..... 43	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 42
Partrick & Carter Co.—Electrical Supplies..... 44	Union Sand Paper & Emery Wheel Co.. 37
Pelton Water Wheel Co..... 2	U. S. Buggy & Cart Co.—Wagons and Carriages..... 31
Peru Electric Mfg. Co.—Porcelain Tubes and Carbon Batteries..... 21	U. S. Playing Card Co..... 2
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	Utica Steam Gauge Co..... 45
Philadelphia Scoop Co..... 46	Waterous Engine Works Co.—Saw Mill Machinery..... 19
Plume & Atwood Mfg. Co.—Lamps.... 7	Weber Gas & Gasoline Engine Co..... 23
Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 41	Weston Electrical Instrument Co.—Electrometers..... 42
Porter, H. K.—Bolt Clippers..... 40	Whittemore Bros. & Co.—Shoe Dressing and Patent Leather Polish.... 15
Premier Pen Co.—Fountain Pens..... 33	Willard & Frick Mfg. Co.—Time Recorders..... 45
Randall & Son, P. D.—Bolt Clippers... 39	Wiss & Sons, J.—Shears and Scissors... 40
Rhyder, W. J.—American Commercial Agency..... —	Woerner Preserving Co.—Canned Goods, etc..... 41
Rockwell & Co., C. A.—Coffee Mills... 43	Woolsey Paint and Color Co., C. A.—Paints, Colors, Kalsomines, etc.... 41
	Wyckoff, Seamans & Benedict—Remington Typewriter..... 2

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It is absolutely free and independent of any and all other existing export agencies. Its mission is to originate trade, and not to execute orders, which is properly the function of the commission merchant.

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WHAT THE AMERICAN REPUBLIC STANDS FOR.

IT is probable that the day will be a long time coming when foreigners will fully understand what the American Republic stands for. Mr. Adolf Stern, who has for years represented English houses in Honduras and other Central American states, has recently been giving some advice to American manufacturers, some of which is excellent, but which in one important particular exhibits his deficient perception of the true meaning for the American Republic.

He says: "There is no doubt that the American mills turn out a superior grade of cloths to the English mills." He then gives his ideas as to what Americans should do to catch the trade of South American markets and shows his provincialism by suggesting the imitation of European methods. "For example," he says, "when a European print mill sends prints to the South it makes the goods up in short pieces and ties them neatly with red ribbons. It puts a gaudy picture upon the package, and these two little things are the main factors in selling the stuff. The buyers are mostly Indians. They are attracted by anything gaudy, and give it a preference over the heavier and better American goods cut from a long piece. The foreign goods, as a rule, are full of sizing and will not stand a thorough wash. They do not begin to compare with American prints."

The mistake made is in supposing that Indians even will never learn the difference between a piece of goods that "will not stand a thorough wash" and one that will do good service. Mr. Stern appears not to know how English "sizing" lost trade for English goods in China as soon as the Chinese began to learn through use the superior value of "the heavier and better American goods," the whole weight of which was made up with good fibres. Merchants dealing with Indians who want a trade they can hold can afford to take a little trouble in educating them how to test goods for "sizing" or for good fibres.

The American Republic stands for superior manhood—a manhood that cannot thrive by entering into competition with the world to undercut the lowest wages or to fasten the fetters of poverty on the ignorant by selling adulterated goods. Its whole effort and purpose is to make products better and cheaper by improving the laborer as well as the machine, by using intelligence to watch the machine perform labor instead of throwing the burden of labor on the man. This is why the exports of American manufactures has risen from \$40,345,892 in 1860 to \$228,489,893 in 1896, and will continue to increase with augmented momentum. With growing intelligence that is now world-wide, merchants who seek to thrive by cheating their customers will be abolished.

LABOR-PERFORMING MACHINERY WINNING THE DAY.

PROGRESS in any country is limited by the natural resources that may be used and the intelligence with which they are used.

Neither England nor America produces natural resources. They use natural products in manufacturing commodities. All the progress made in America is due to the increase in intelligence with which its natural resources are used. This intelligence has formed its best expression in the development of tools, devices, machinery and facilities for cheapening labor cost by making labor more productive. As a natural sequence, the real labor is being performed more and more by the machines and the laborers are becoming more and more brain workers instead of muscle workers. They are becoming masters of machinery instead of manual laborers. One exceedingly significant fact involved in this change is found in the high average rate of wages earned by the entire body of the American people, being very much higher than that of any other country. This increases the purchasing power of America enormously, making it by far the best market in the world. But this gain is not made at the expense of an increased labor cost of products. It comes entirely out of the machines, and not out of

buyers. If this were not true the sale of American-made articles could not increase in foreign countries as it is doing.

Here is a table which shows how the export of manufactures has been increased since 1860:

EXPORTS OF MANUFACTURES.

Year.	Value.	Per cent. of Total.	Total Exports.
1860.....	\$40,345,892	12.76	\$316,242,423
1870.....	68,249,764	15.00	455,208,341
1880.....	102,856,015	12.48	823,946,353
1885.....	147,187,527	20.25	726,732,946
1890.....	151,102,376	17.87	845,393,828
1891.....	168,927,315	19.37	872,270,283
1892.....	158,510,937	15.61	1,015,732,011
1893.....	158,023,118	19.02	831,030,785
1894.....	183,728,808	21.14	869,204,937
1895.....	183,595,743	23.14	793,392,599
1896.....	228,489,893	26.47	882,519,229

The jump in the year 1894 will be observed; it was attributed at the time to the disposition to unload goods at a sacrifice, which usually accompanies an economic crisis, and the prediction was confidently made that it would not be maintained. It was maintained, however, during the year 1895, as will be seen by looking at the table, and not only has it been maintained, but it has been greatly added to during the fiscal year, 1896, which ended June 30th.

This exhibit becomes still more striking when it is remembered that while American manufactured exports have been increasing those of European countries have been decreasing. The value of 10 chief articles of British exports declined \$20,000,000 from 1884 to 1894, the foreign trade of France decreased 9 per cent., and of Germany 27 per cent. during the same period.

American wage labor advanced during the decade from 1884 to 1894, therefore the cheapening of labor cost that has made this increase in foreign trade possible is due to machine labor.

The reason of the enormous increase in American wealth, however, is due to the two factors of machine labor and natural products. A larger percentage of the material used in American manufactured commodities comes from American soil than is true of English commodities in relation to English soil. When England sells a part of the price goes to some other country for material. When America sells the whole of the price belongs to America. The effect of this difference is most striking. According to Mr. Mulhall, the English statistician, the wealth of England and the United States compares as follows:

1860.	
Great Britain.....	\$29,000,000,000
United States	14,000,000,000
1890.	
United States	\$64,220,000,000
Great Britain.....	47,000,000,000

As America had all the natural resources in 1860 that it has now it is evident from its increasing foreign trade and its increasing wealth that labor-performing machinery is winning the day.

A WRONG POLICY.

A TENDENCY is shown by the United States Consuls, in their reports to the Department of State, to advise American manufacturers to make goods for foreign markets like the goods which are found at the present time to sell readily in those markets. In order to do this they must send foreign countries copies of the things the people are accustomed to using. This is a wrong policy, and we desire to impress upon manufacturers and foreign buyers our reasons for thinking so.

It is to the best interests of the importer to introduce into his market not what the people have been accustomed to using, but if possible, better goods, that is, goods that they can use with more comfort or profit. It may require a little extra work and time to do this, but when a superior article has been sufficiently introduced to turn local opinion in its favor, the business of handling it becomes much greater and correspondingly profitable. The enterprise of the importer wins him trade exactly as it does the manufacturer. He will be credited with the sagacity of seeing the advantages that come from the introduction of new goods, and when the demand is

developed, he before all others, will be called upon to supply the same.

Not many years ago the people of Mexico were using very inferior agricultural implements, for instance, their plows had but one handle and did but little more than scratch the surface of the soil. The Mexican farm hands were satisfied with these plows, and had all the importers demanded such plows because the people were accustomed to and hence preferred them, Mexico would be using such plows yet, getting no benefits from the improvements of the age. A few of the enterprising importers of agricultural machinery, however, introduced the two-handled American plow, and little by little secured their introduction. Now mostly all the farmers and planters in Mexico are buying American plows.

Another illustration: in Holland many people are accustomed to wearing wooden shoes, which we believe have been in vogue in that country for generations, and hence there is an established demand in that country for shoes of this description, but enterprising Americans, instead of catering to this condition by making wooden shoes for the Dutch, have gone into that country as they have gone into England, France and Germany, with stocks of very handsome, well-fitting and durable American machine-made leather shoes. They have opened up stores of their own that they might be able to bring these shoes more effectually to the attention of the people, and thus overcome any existing prejudice in favor of the homemade, and uncomfortable wooden shoes, feeling sure as they did that the good sense of the people would not permit of their wearing wooden shoes when they once realized the comfort in the American shoes, and in this they have not been mistaken. With the advent of the American shoes the wooden kind have now become a back-number in many districts of Holland.

These illustrations have a deeper significance. Instead of studying to make what the people are accustomed to using, Americans are studying to make better goods. The difference in the effect of these opposite policies is to cause the American manufactures to be preferred to those of European manufacture, and it is now a serious question with Europeans how they can retain their trade in competition with Americans.

The reason for the advice given by commercial travellers that our manufacturers should send out what the people are accustomed to use, is easily found. Such men are more interested in present sales than in future business. They want goods that will sell easily at the present time, for they cannot wait to educate the people and develop a larger trade a few years hence. The foreign importer and domestic manufacturer are in a different position. Their business is for the future as well as for the present. They can afford to educate people to the use of new tools, machines and goods of superior merit. The American sewing-machine and the American typewriting machine are instances of this kind. American manufacturers are famous for their ingenuity and enterprise. Foreign importers should emulate their example and, instead of importing what their customers have been accustomed to, import whatever their people can use to better advantage. In this way they can lead their people in progress and they will be rewarded by the growth of their own business.

Our manufacturers should not therefore yield to the demands of traders, who want inferior and cheaper goods, but should insist upon supplying the latest and the very best of American wares for export.

THE RIGHT PLACE FOR STRENGTH.

THOSE who have opportunity to observe invariably notice the difference in weight between almost everything American made and things Europeans make. It matters not what articles are taken for comparison, from bolts and locks on doors to the machinery in the farmers' fields. This is said to be due to the fact that iron and steel of American manufacture are tougher than English, and that a bar of American steel will stand a much heavier strain than a bar of English steel of the same weight and thickness. It is clear that an American machine or tool can on this account be

lighter, while equally strong, than an English tool. Give a workman his choice between a light and a heavy tool, all other conditions being equal, and he will take the light one. If it is necessary to put more weight into a tool or machine to get the required strength by using English iron than would be required if American iron was used, then it is inevitable that the extra weight will take more strength out of the man, the horse or the motive power by which it is to be operated. A man of good sense will not use an unnecessarily heavy tool, nor will he compel his horses to do so.

At a recent exhibit of the Royal Dublin Agricultural Society it was noticed that all American machines were lighter than those of Irish or English make and given out that this difference in appearance would make it difficult for Americans to create a demand for their machines. A salesman should ask for no better point of advantage than equal strength with less weight. Added weight means, as already said, added strength taken out of the man or horse, slower work for both and less of it. The eye may be prejudiced against an unaccustomed lightness in appearance, but the muscles will be delighted with an increased ease in operation. Strength and weight must balance. When Irish and English farmers take the evidence of their muscles and the condition of their horses after a season with the full-strength, light-weight American machines they will realize that the right place for strength is in the machine, and if iron is used to put it there, that of a quality that makes extra weight necessary to get the strength, then they must expend extra strength to operate the extra weight. When this idea gets abroad, as it surely will after a little experience, the man with the heavy-appearing machine will find the tables turned against him. The appearance of useless weight will be an effectual bar to his sales. Americans should continue to put in all the strength required, but no extra weight.

AMERICAN TOOLS IN SOUTH AFRICA.

THE loyalty of an English subject is of that peculiar quality which produces insular blindness and mental incapacity to calculate the sweep of forces which do not pay respect to the boundaries of Her Majesty's kingdom. Wherever an Englishman goes he carries England with him and is astonished when he finds himself in a foreign country where everything is not "English, you know." His loyalty is made dense by his prejudice in favor of the things he has used in "the old country." It is evident that when he comes in contact with things which tell of the existence of another country, things different from those he has been accustomed to using for a similar purpose, things not English but being used by Englishmen, his feelings must undergo a twist producing a sensation resembling seasickness.

The experience of an Englishman in South Africa, as told in a Sheffield paper, is as follows: "Being from Sheffield he was interested in discovering where the tools and general hardware in use in South Africa came from. To his disgust, he says, he found them to be chiefly American made, some from Germany, but most from the United States, and practically none from England. He refers particularly to axes, hatchets, chisels, hammers, saws, carpenters' tools, buckets, kitchen utensils, etc. As his disgust settled his patriotism asserted itself and "he generously offers to give any Sheffield manufacturer who will write him for it, full information as to prices, shape and kind of tools the Americans send to South Africa." He labors under the delusion that caused Joseph Chamberlain, Secretary of State for the Colonies, to issue a general call for this kind of information not long ago. We expressed a fear at the time that all the information obtained would not be published. There are some things Englishmen don't want to know, there are some things they don't want to publish in their official reports.

Commenting on this report from South Africa, the English *Hardwareman* says: "We have no doubt this disgusted Sheffielder, consciously or unconsciously, exaggerated somewhat when he declared that in none of the stores could one buy an English tool, but equally without doubt the American goods greatly preponderate in that country. It is no news—the fact is proverbial; but what

chiefly captivates us in the lamentations of the patriotic Sheffielder is his naive appeal to the home manufacturers to rouse themselves. He evidently thinks the British manufacturer is simply aching to know what patterns to make for the South African market, and is prepared to throw all his energies into supplying the precise things wanted."

The *Hardwareman* then goes on to say that "the British manufacturer, backed up by the British workman, doesn't want to be bothered with any such information; that they know perfectly well, and have known for a good many years, that certain American patterns are far more popular in many of the colonies than corresponding British patterns. The consequence is the disgusted Sheffielder will go on buying the American goods until he grows hardened to the process. He is not the first Englishman in South Africa who has felt the same disgust in the early days of his new experience. He is not the first who has written home to express his disgust."

The essential point in this acknowledgment of the superiority of American tools by English authority from Sheffield and Birmingham is in the fact that American manufacturers have not copied English tools in shapes or kind, but have devised more practical tools for the work to be done and therefore are offering tools which increase the efficiency of labor, get more out of the material used, and enable the workman to furnish a better product for the same or a lower price than can be furnished by English-made tools. Here are all the factors of industrial success: increased efficiency of labor, increased output from material used; increased quality or utility of product. Those who know the value of these factors will know that they cannot afford to buy any but American tools.

AMERICAN MANUFACTURING METHODS.

THE *Canadian Manufacturer* in commenting on an article descriptive of American manufacturing methods which appeared in the *Iron Age* (New York) intimates that it is the American way of handling a manufacturing plant that is so rapidly causing the substitution of American hardware for British make, in the Canadian market.

The features of American methods brought to notice are such as make for life, progress, adaptability; the very antithesis of English stagnation. Americans are quick to drop an old method and try something new. They will take up a thing when it is considered a novelty instead of waiting for the substantial growth which follows the introduction of a good article or a good machine. This disposition is so universal it is regarded as a national trait and is many times called a fault, but it has caused the whole world to understand that when the newest and best thing is wanted, America is the place to look for it.

When an American capitalist builds a new factory, or an established concern adds to its facilities, a keen, world-wide search is made for the latest and best in every tool and machine that is to be used. The entire equipment, not only for the actual processes of manufacturing, but for receiving, handling and caring for material, also for storing, packing and shipping finished products must be *up to date*. Not a detail is overlooked from the furniture and appliances for the office to the utilization of power and waste material. Machinery or mechanical devices that have held a preference for a quarter of a century are passed and those of greater usefulness, perfected within a year or a month, are eagerly seized. The effort to anticipate the future is everywhere visible. Those who study to modernize every tool, appliance and machine do not turn out last-generation products. Everything they make conforms with the latest ideas, the newest fashions, the prevailing whim. This is illustrated by the avidity with which Americans have taken up the manufacturing of bicycles, sporting goods, machinery for farming, mining and the manufacturing of clothing, boots and shoes, etc.

Another feature of American manufacturing methods—one that is of the highest importance to foreign buyers is the American system of standardizing every part of a machine so they are interchangeable, any part fitting any machine as well as the one for

which it is first used. All tools are standardized so as to produce standardized parts without the slightest variation. This renders American machinery easy to install, easy to keep in repair and satisfactory in operation.

This quickness of perception and genius for adaptability has made Americans a nation of inventors. And for this reason, if a design is wanted or an importer has a trade for an article which he can order in sufficiently large quantities to absorb the cost of making special patterns, tools or machinery, in no country in the world can he get what he wants made to order as quickly and as cheaply as in the United States, and the chances are he will find it improved in many ways, so that as a final result his trade will be benefited. When an American is given something some one else has made, his way of proving himself an American is to make it better, handsomer, more useful.

THE FOREIGN TRADE OF THE UNITED STATES.

THE fiscal year of the United States closed with June 30. Returns for the foreign trade for 1896 show:—

Total exports	\$882,519,229
Total imports	779,707,306
Balance favor United States	\$102,811,923

The exports of manufactured articles amounted to \$228,429,893, which is 26.47 per cent. of the total exports. This is an increase of more than 3 per cent. over the proportion of 1895. In 1894 the export of manufactured articles exceeded the exports for 1893 by \$25,705,690. It was then claimed that this increase was due to the unloading of surplus stock left on hand by the shrinkage of demand due to the panic of 1893. This claim seemed to be proven by a slight falling off in 1895. No such claim can be made to account for the larger increase of 1896, which is \$44,761,085 more than for the year 1894. The manufactured exports for 1894 were 21.14 per cent. of the total exports, and for 1896 they are 26.47 of the whole. This shows that the business for 1896 is a true increase, which shows every indication of being sustained and still further augmented.

The increased business is well distributed, covering most notably agricultural implements, carriages, railway cars, manufactures of copper, cotton cloths, glassware, cartridges, manufactures of rubber, electrical and scientific apparatus, builders' hardware, sewing machines, machinery, locomotives, boots and shoes, paper and its products, soap, manufactures of tobacco, manufactures of leather and manufactures of wool.

The increased sales in all of these classes of articles is evidence that foreign importers are beginning to repeat substantial benefits from the educational work they have done in introducing American-made implements, tools, devices, machinery and goods. With the momentum thus gained and the general impression constantly growing in favor of American manufactures the future is full of promise for all importers who give their attention to the introduction of the best types of American manufactures that may become useful in their countries. This fact is made clearly apparent when this increase in American manufactured exports is compared with the fact that the value of ten chief articles of British exports declined from \$725,000,000 in 1884 to \$705,000,000 in 1894, and the value of the foreign trade of France was 9 per cent., and that of Germany 27 per cent. less in 1894 than in 1884. The exports of a country cannot decrease without causing the importers handling the products of that country to suffer a loss of business.

The tides of commerce shift slowly from one country to another. To silence the paean of supremacy which has long been heard around the world for excellence in any form of endeavor conceded to a great nation is a slow process. But the conservatism which long resists the tendency of the tide to turn, augments its force and persists in driving it in the new direction when once a channel has been cut for it. Two facts are clearly shown in the rising tide of exports of American manufactures. First, that manufacturers in the United States are learning the value of a foreign trade well established in widely distributed markets. They find a benefit in increased volume of output and they are being taught by experience

that such a trade is more uniform than one confined to a single country, because conditions that disturb business are not operative with equal force in all countries at the same time. While some countries are suffering from a depression other countries are prosperous. This gives to the manufacturer who succeeds in establishing trade in several countries a steadily increasing average demand which keeps their factories constantly at work undisturbed by trade fluctuations in any single market. Second, that foreign importers are learning how to introduce American-made articles and goods and that the permanency and growth of their business come from work expended in educating their people to use better things than those to which they have been accustomed. It is better trade policy to enlighten consumers as to the merits of articles than to cheat and degrade them by taking advantage of their ignorance. The custom of a people taught to exercise an intelligent preference is the most stable and profitable trade in the world.

In the last analysis it will be found that the export of American manufactures in 1896 is 50 per cent. more than in 1890 and nearly 45 per cent. more than in 1893, because the world as a whole is growing more and more intelligent and demanding better things for which America is the source of supply. In drawing this conclusion we are aware that "the Yankees of the Orient" have ascribed their progress to the same all-pervading influence that is up-building universal progress. The Meiji Club, Tokio, Japan, says in one of its circulars:

"The rapid progress made in all institutions of this country during the past 30 years and the marvelous advance in commercial and industrial affairs are doubtless the fruit of the concentrated efforts of the people, but their real fountain head is the universal progress of the world."

THE PROGRESS OF MEXICO.

IF the Spaniards in 1492 had been a really civilized people what a different record would have been made in history. Its splendor of that day was the splendor of barbarism. In every land it entered its rule was established by the force of plunder. In the Netherlands, a large part of the American continent Spanish ascendancy was gained by the methods of destruction.

Reverence is a stranger to vandals. Before the fierce onslaught of their might in Mexico the civilization of the Aztecs was defenceless. Their rights, their institutions, their religion could oppose no barrier to the demands or methods of European—by some called Christian—warfare. The Spain of to-day is but the shadow of the Spain of the fifteenth century, but the Mexico of to-day has the respect and well wishes of the world and is fast rising in rank and prosperity. In this shifting scene of the centuries the truth may be discerned that nations have to answer for national crime by expiation.

Can any one depict the surprise that would have fallen on Europe had Columbus discovered a country its equal in every respect in all arts of peace and warfare? How differently European negotiations with the New World would have been conducted? What a marvelous gain would have resulted from intercourse with newly found equals!

The history of Mexico is so indelibly identified with the romance of Spanish adventurers it is difficult for the untravelled person to realize that the Mexico of to-day is fully abreast with the progress of the age in all the elements of national power and greatness.

It is difficult for an American of the United States Yankee variety to understand that in any respect he is a provincial. Such however, was the experience of a committee of the National Association of American manufacturers who recently visited Mexico to learn how American ascendancy in that country could be increased by nineteenth-century methods, the extension of trade for mutual benefit. These gentlemen spent nearly two months in visiting the Government institutions, business houses and manufacturing plants, holding important interviews with President Porfirio Diaz and his cabinet officers and with many prominent native and foreign busi-

ness and professional men. They investigated a territory covering the most important centres of the country, and embracing all climates from the table land to the coast. Mr. Philip G. Roeder, of the City of Mexico, who accompanied them as guide, interpreter and travelling companion, says in a letter to the *Iron Age*, New York:

"These gentlemen were surprised at the advancement and the culture they found in Mexico and frankly admitted that their preconceived ideas of the country were entirely wrong and that they would do what was in their power to set their home people right." He also says: "The authorities in Mexico were only too happy to assist the committee in every way, and the business men and manufacturers opened stores and factories wide and were heart and soul with the movement, knowing that it must redound to the ultimate benefit of all." This is another example of the uplifting influence of universal progress.

FIFTY YEARS OF DEVELOPMENT.

THE youth of the American Republic is strikingly illustrated by the fact that it is just reaching an age that admits of anniversaries of its institutions and its enterprises. The *Scientific American* has recently published a fiftieth anniversary number that has a singular interest for the world as we now know it. If one might indulge in speculative thought, it would be entertaining to go back fifty years and try to conceive what skepticism and wonder would have been excited in the minds of men, had the progress, in mechanical development now shown, been portrayed fifty years ago as a prophecy of what was to be. Such a reflection leads naturally to turning the mind to the future and asking, If these accomplishments are the record of fifty years, measuring backward, what will be the record, measuring forward, for the next fifty years, building on the foundations and with the momentum now gained?

Naturally, the *Scientific American* reviews the progress of invention. It divides the periods into decades, and groups, in each the more important or impressive inventions of that time. This makes a comparative study of development easy and strikingly shows how one generic invention or improvement opens the way for a score of others, each of almost fundamental importance in itself. Railroad development is exceedingly noticeable in this respect.

Commencing with 1846, it is noted that Morse had just applied electricity to its first work of practical utility, and Sobrero had developed the properties of nitro-glycerine.

The decade from 1846 to 1856 witnessed the initial inventions for the sewing machine, the grain reaper, the sleeping car and the Suez Canal.

The decade from 1856 to 1866 brought the Atlantic Cable, the discovery of aniline dyes, the manufacture of paper pulp from wood, the discovery of coal oil in the United States, the ironclad Monitor, explosive gelatine, the marine torpedo and the fundamental principles of the dynamo electric generator.

The decade from 1866 to 1876 clearly shows the impetus of what had been accomplished up to that date. The improvement of the dynamo and electric motor by a long series of inventions brought within the range of possibilities the great development of electric lighting, electric railways and electric power. In this decade also came the Bessemer process of making steel, dynamite, the air brakes, the Gatling gun, cold storage equipments, the cable street-car system, the self-binder reaper and harvester and machinery for making tin cans. It is also mentioned that in this decade the great discoveries of Louis Pasteur began to become known to the world.

The decade from 1876 to 1886 has a glory peculiar to itself in the telephone inventions of Bell and others. Eads built the Mississippi jetties, cigarette machines were invented, the typewriter was added to the facilities of commerce, enamelled sheet-iron ware for kitchen use benefited health and comfort and the phonograph came to assist and amuse within this period. During this time, also, the first electric railways and passenger elevators came into practical use.

The last decade, from 1886 to 1896, the flood of inventions

became so great that it is difficult to select a few for mention without omitting many others of equal or greater importance. Mention may be made, however, of improvements in railroad cars and vestibuled trains, Harvey process of annealing armor plates, type-setting machines, the small-bore rifle and the now much-studied X rays.

The great works of the ancients were in monuments involving the patient manual labor of myriads of workers. The great works of modern times are all in the direction of displacing manual labor with machine labor, adding to productive capacity, decreasing cost, increasing consumption and widening the enjoyment of comforts and luxuries, making the world, on the whole, a better place to live in. Strike out of existence the accomplishments of the last fifty years and the people of the world would feel themselves turned back to barbarism. The American Republic is proud of its share in the development of the age.

A SUGGESTION TO COSTA RICA.

PROGRESS is becoming the watchword of this Central American nation. It has recently made a great advance by the adoption of the gold standard, bringing its monetary system more nearly in harmony with that of the great manufacturing nations from which it buys its manufactured supplies.

Costa Rica is now causing its consulates to be active in interesting manufacturers in the trade of that country. If it would obtain the best results it should encourage—not the manufacturers of the same kind of things its people have been using, but the best things that can be found adapted to their use. Being an agricultural country, it should cause exhibits to be made of the best agricultural machinery that can be found designed to do the kind of work that the products of the country require. The advantage of having these exhibits in Costa Rica will be found in their educational influence on the people. This generation will make no progress if it does everything as its fathers did. Costa Rica will not progress rapidly if it follows the habits, tastes and customs that render it less advanced than other nations. Every merchant who introduces a new article, that is an addition to or better than those in use, should be counted a patriot.

Words to South American Buyers.

(From Our Special London Correspondent.)

LONDON, August 1, 1896.

BY the time this letter appears the company of United States manufacturers will have begun their journey to visit the principal South American countries. I wish, therefore, to take the opportunity of addressing this article to buyers in South America, particularly to Brazil, Uruguay, Argentina, etc.

In the first place it is, I believe, often thought by importers in those countries that they cannot get what they require in the shape of manufactured goods from the United States as they do from Europe. That is quite fallacious, and the quicker South American buyers recognize the error of the assertion the better for them. In all goods in which American manufacturers do an export trade they are able to supply on favorable terms in direct competition with Europe. Writing from Santos in September, 1894, Consul Smith said that "from personal observation, from information which I have carefully collected and from comparison of articles manufactured in Europe and the United States I am able to refute the assertion that American manufacturers cannot successfully compete in quality with those of Europe." That is the deliberate opinion of a man very competent to judge, delivered after careful personal examination of the rival goods on the spot and made with a full sense of his responsibility.

Now let us see what are the facts. First of all I wish to point out to South American buyers that American manufacturers send considerable quantities of their goods to Europe and especially to England herself, which is fairly reckoned to be the leading manufacturing country in the Old World, although it has had to give away in many respects to the United States in the New Hemisphere. Well, I think it may reasonably be taken for granted that if United States makers can send their goods to England and sell them in competition with those of native production that such goods must be worthy of attention, otherwise they would not sell there. That proportion seems so eminently reasonable that it cannot be disputed. Well, I see, from the official Government returns from Washington, that the United States exports of agricultural implements to England in 1895 amounted to \$757,715; of carriages, horse cars, etc., \$364,361; cotton cloths, \$616,961; cotton wearing apparel, \$337,075; builders' hardware, \$857,417; machinery, including steam engines, \$2,611,000; sewing machines, \$848,069; leather, \$5,532,000; leather soles for boots, \$7,836,000; manufactures of wood, \$2,070,000. These items are all in excess of the value of trade done in years immediately preceding 1895. American goods are finding a steady and

increasing sale in England and throughout Europe. Now we see that in farm implements, hardware of a miscellaneous kind, general machinery, steam engines, sewing machines, leather and some kinds of cottons Americans can compete with England in her own market. That being so it is only reasonable to assume that she can do so in South America where there is mutual sympathy and a great knowledge of local requirements by the American exporter.

Indeed all these advantages have been fully availed of by a good many South American buyers, with great benefit to themselves. American manufactures are being purchased in increasing quantities in South America year after year. For instance, exports of farm implements have risen from \$97,700 to \$132,000 to Mexico alone during the last three years; carriages from \$139,000 to \$483,757; manufactures of cotton from \$164,189 to \$410,688; hardware from \$312,000 to \$371,180; machinery, including steam engines, from \$1,856,000 to \$2,029,000. And so the progress is evident throughout the whole of the trade. I have simply taken Mexico at random to illustrate how commerce is expanding between the United States and that country. It is the same all over South America.

One of the principal facts for buyers to remember is that American makers will adapt their goods to local needs so far as they can do so without sacrificing quality. They want to please their customers, and they have no deep-rooted ideas that whatever they use in the United States must necessarily be equally adapted for service in Argentina, Brazil or the British colonies. This attitude of "open mindedness," if I may so call it, makes such manufacturers preferred to those who insist that what they make must serve for all countries and for all time.

South American buyers will certainly be well advised in examining the merits of the United States machinery, especially for mining, agricultural purposes, etc. Their steam engines are steadily superseding those from Europe, being lighter and more fitted for local requirements. American hardware, too, is already famous throughout that continent for its excellence, while the superiority of American-made artisans' tools over those of foreign manufacture is generally recognized even by foreign workmen themselves. Shoes made in the United States have found a home in most of the South American cities, being cheaper, more durable and better made than those of European production. It can easily be understood that this is so, because most of the shoes made in Europe are from leather imported from the United States, which has an enormous supply of this material. It is found, indeed, that shoes made of American leather, either in the United States or in South America itself, have proven to be more durable than those of a like quality or of the same grade made in Europe, and shoes costing \$4 to \$8 made in Europe will hardly last half as long as a pair of the same grade and quality made of American tanned leather.

Carriages and street cars of American manufacture are very popular in South America. The English cars for railroad service are disliked because the natives revolt from the method often prevailing in the British cars of locking the people in and so preventing free communication between the coaches. I may remark in passing that all the best street cars in London, Eng., are made in the United States. Comment is needless.

When dealing with machinery I omitted a very important branch, namely, that for working wood, which is a growing industry in South America. Buyers should inspect American machinery of this class. Watches will also find a ready sale among buyers.

And finally it is absolutely necessary if this business is going to expand to the dimensions required, to do the trade in American ships and not send goods via England. It is most significant that the American delegates mentioned above have proceeded to South America via England instead of going direct. That ridiculous anomaly must be rectified, and the sooner the better.

British Opinion of American Capstans.

THE *Yachtsman*, an English authority on nautical apparatus, speaking of a controversy that *Forrest and Stream* is carrying on regarding the Payne bill, remarks that incidentally there has cropped up a point which merits attention from British yachtsmen, viz., the undeniable superiority of American-made capstans over those offered by English firms for use aboard yachts. This is chiefly felt in the small sizes of capstans; for, whilst one may get from America a double-action capstan, suitable for the fore deck of a 42 footer, the smallest that can be obtained in England is so heavy that even the skippers of 52-footers are loath to have it on their fore decks. Colonel Barrington Baker has a capstan of British manufacture on his smart little ex-10 rater, *Kite*, but before he ventured to ship it, he had about 1 cwt. of superfluous iron and steel taken off in the Ordnance Works at Plymouth.

Sticky Fly Paper.

THE world's supply of sticky fly paper comes from Michigan. There are several small factories, but the one great producer is a single factory, employing about 600 hands all the year round, which ships its product to every land. The most intimate friends of the proprietors are never invited to enter the premises. The preparation is not patented nor copyrighted, as to gain the protection of the Government they would have to name the ingredients that go into the sticky formula, and that would give trade pirates a chance to operate. Only the proprietors know the formula, which they mix in secret, allowing no employee to be present, and they have successfully guarded this secret for over 20 years. None but the most trustworthy men are employed, but even the most trusted employee in one department is never allowed to learn more than one branch of the business nor visit any department but his own, but when once engaged has substantially a life job.

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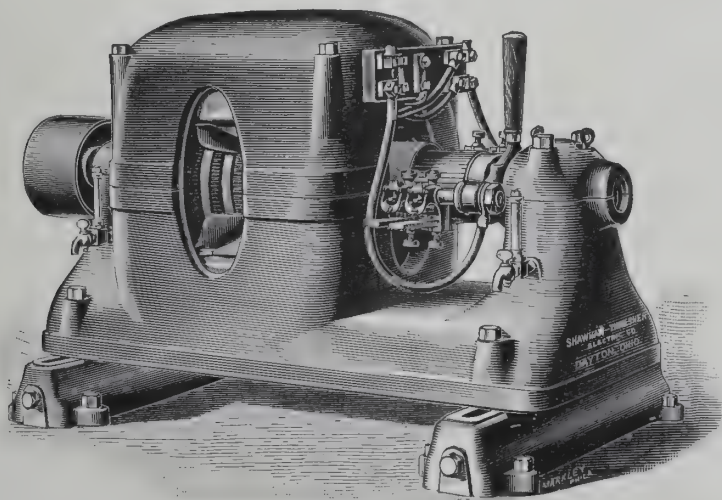
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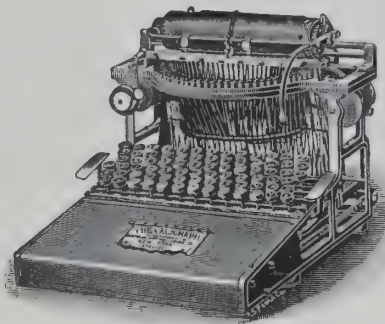
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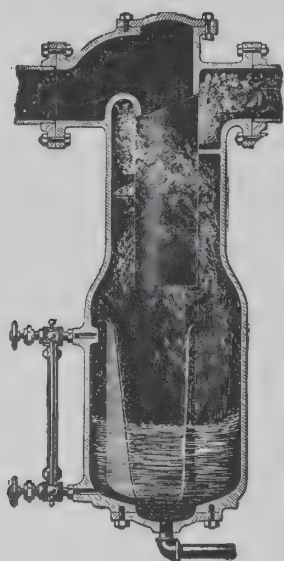
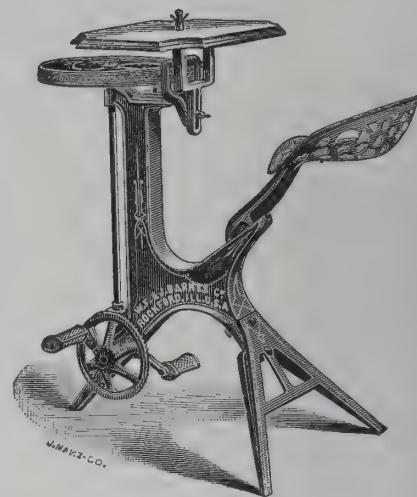
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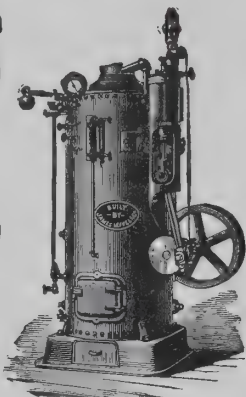
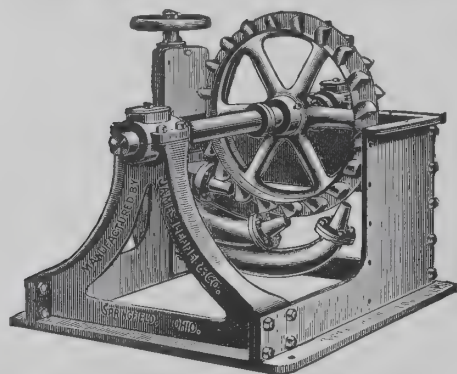
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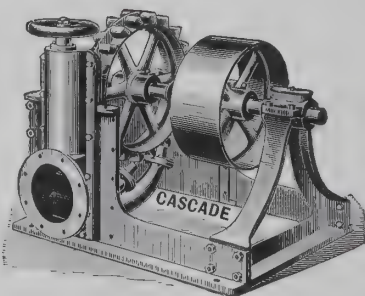
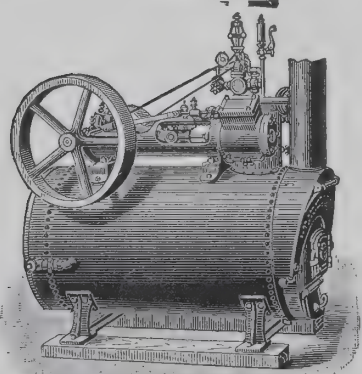
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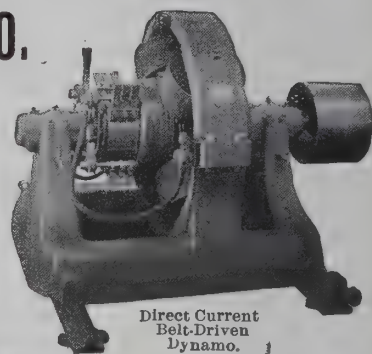
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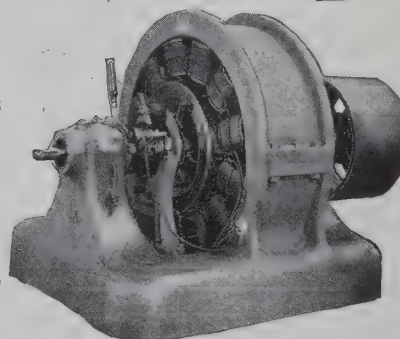
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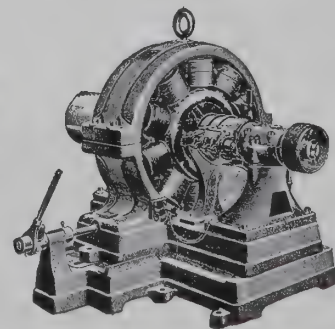
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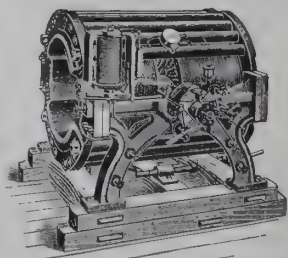
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DEVOTED TO THE FOREIGN TRADE IN MACHINERY AND HARDWARE.

Aluminum Horseshoes.

A NEW article has recently been placed on the market, manufactured of aluminum, in the form of aluminum horseshoes and racing plates, under the patents of W. J. Kent. These shoes will average in weight for the ordinary road horse about 7 ounces complete, and the racing plates about $1\frac{3}{4}$ ounces. These weights will vary a little, however, according to the size of the horse's foot, as to whether they have to use a large or a small shoe, but the figures given are about the average.

The theory of the construction of these shoes is as follows: The body of the shoe is of aluminum in which is set on edge a tool-tempered steel strip, running entirely around the shoe about 1-16th of an inch from the outside. This strip is set in such a manner that when the horse in travelling strikes the ground the plane of the strip is perpendicular to the direction at which the horse strikes. The cause of wear in the ordinary shoe is not so much from the force of the blow of the horse's foot coming in contact with the ground as it is that when his foot is flat on the ground the shoe slips. The wear from the slipping of the shoes on the ground is very much more than it is from any other cause. But by putting this tempered steel strip on edge it not only resists wear better than the soft steel of the ordinary shoe, but it acts as a permanent calk and prevents slipping. The shoe as well as the racing plates are convex inside, which almost entirely prevents the horse's foot packing with dirt.

It is an old saying with racing men that an ounce off a horse's foot is equivalent to a pound off his back; and as these shoes are only about one third the weight of shoes manufactured of steel, it is not to be wondered at why several horses shod with aluminum shoes this season that had formerly been looked on as outsiders have recently won races.

The steel strip on the face of the shoe projects about one-sixteenth of an inch beyond the aluminum and is bedded in the aluminum about one-quarter of an inch or less, depending on the size of the shoe, and for this reason it will be readily seen, especially with running horses, what a grip it enables a horse to take, especially when throwing himself forward on a track which is a little wet, it gives him as firm a foothold as possible.

One great use for this shoe will be in the cavalry service of the armies of the leading nations of the world. A complete set of these shoes in the saddle-bags of a horse will weigh about $1\frac{3}{4}$ pounds, whereas a set of steel shoes will weigh in the neighborhood of five pounds. Another important feature is that on the march these shoes are fitted cold when the horses are shod, and a blacksmith's complete outfit consists in little more than a knife, a hammer and a few nails, whereas with the steel shoes there is the additional weight to carry, and it is almost impossible to fit a shoe to a horse's foot without the use of a forge. This is a great advantage in favor of aluminum shoes. The question of the amount of saving to the horse on long marches with aluminum shoes is one which is too extensive to enter upon here, but any old campaigner will vouch to the fact that on a long march every ounce counts, whether it is on the horse's back or on his foot, and if aluminum shoes are used on the feet and carried in the saddle-bags it counts as no small quantity as to the condition of the horses at the end of a hard day's march.

Machine and Hand Work.

COMPARING American and English manufacturing systems, British authorities concede that the American system of making things in large quantities by highly developed labor-saving machinery and appliances turns out goods at less cost, but does not develop skill in handwork, the result being that while the American craftsmen may be the better head workers the Europeans are the better hand-workers. An English contemporary, in summing up the points of difference between the two systems, concludes that though the American shops turn out much work, their practice is somewhat of the "slap dash" or "hit-and-miss" order, and that fine and correct work is more likely to be obtained through the English system and from the English factories. In this our contemporary is mistaken; for machinery does its work uniformly and accurately, while the hand cannot, and the more machinery is used in construction the nearer perfection is attained in the product. English machines, implements, vehicles, etc., are as a rule strong, durable and effective in operation, but usually their weight is not so well distributed for strength, neither are they so symmetrical and adaptable as the American.

Are Cut Nails Doomed?

THIS query is one which seems to us to merit the careful consideration of our nail manufacturers, who have, we fear, of late years manifested a tendency to allow too much of this business to pass into foreign and American hands. Probably the tentative change is largely owing to the success of the continental makers in the wire trade, but, be the cause what it may, it appears to be a fact that we are not doing justice to ourselves in respect of the manufacture of wire nails. In the recently issued official report of the American Iron and Steel Association statistics of a very striking character are given, proving that the wire-nail trade is increasing at an enormous rate, while the production of cut nails is declining almost as rapidly. In 1886 the output of iron and steel wire nails in the United States was 600,000 kegs, in 1889 2,435,000 kegs, in 1893 5,095,945 kegs and in 1895 5,841,403 kegs. In 1886 the production of cut nails was 8,160,973 kegs, the highest total ever recorded, whereas in 1895 only 2,129,894 kegs were made, or very little more than one-fourth of the quantity turned out in 1886. Last year practically all the nails were of steel, and as each keg weighs 100 lbs., it will be seen that the production of wire nails alone was 260,777 tons; and it is worthy of note that the output of wire rods in the United States was 791,130 tons, as against 457,099 tons in 1890. It is obvious, therefore, that in America the displacement of cut nails by wire nails is going on apace, and that it is only a question of a short time for the cut nails to become practically extinct. In this country we have, unfortunately, no statistics relating to the subject, but there are good grounds for fearing that we are not doing all that we might or could to hold our own, either in the wire trade or in respect of wire nails. As a matter of fact, any want of success in the production of wire necessarily involves a failure in respect of the wire nails, seeing that in Germany, Belgium and the United States the nails are largely produced in order to use up the wire. In Germany and the United States the well-protected home markets naturally afford a "backbone" to the makers there, and by selling at good prices at home they can afford to compete keenly in the British, foreign and colonial markets - as indeed they do, and have done for a long time past.

But even if that is the case our own manufacturers would be wise to look into the matter afresh, and plan out some method of meeting the competition. In cut nails we have held our own, and we are of opinion that we may do the same in wire and wire nails if masters and men go about the thing properly. Our exports of wire have increased steadily for some time past, a fact which encourages the hope that the wire-nail trade of this country may be greatly expanded by the use of proper material and the most modern machinery, aided by the conscientious co-operation of the workmen with their employers.—*London Ironmonger.*

Chinese Railroad Building.

AN IMPERIAL decree has been issued from Peking, placing the construction of the railroad from Tientsin to Lu Kuan Bridge, eight miles west of Peking, in the hands of Hu Chilfen, a native of Kuan Sen province, and holding the rank of provincial judge. The cost of the 70 miles of line is stated in the decree to be about \$2,000,000, or more than \$28,000 per mile. An American engineer recently estimated the cost of this line at \$20,000 per mile, with rolling stock and equipment complete. The proposed route presents no difficulties, except the necessity of high embankments and numerous drains and culverts in certain localities to cope with the annual floods. It is understood that no foreign capital whatever is to be employed. The decree orders merchants to form stock companies for railroad building, which outlines the present railroad policy of China. There is a strong determination on the part of the Government to exclude foreign capital and foreign control. There is reason to believe, however, that this determination will give way before the magnitude of the undertaking, which will bring to light the inexperience of the Chinese managers. There will then be a great field open to foreign railroad enterprise. This field has already attracted great attention, and it will doubtless be eagerly disputed by the representatives of the railroad interests of various nationalities. The American Minister to China has not failed on all proper occasions to urge on the Chinese authorities the preëminence of Americans in railroad construction and in the manufacture of all those products which China's railroad system will in time retire. It would be much to be regretted should this market be allowed to pass into the hands of others.—*American Machinist.*

American Machinery for Russia.

THE following details are given in the *Railroad Gazette* of the locomotive works project which an American company is about bringing into final shape at Nijni-Novgorod, a historic Russian town, northeast of Moscow. The site of the new plant adjoins the extensive Sormovo works, in connection with which the locomotive shops will be operated. The Sormovo works takes its name from a village on the banks of the Volga River about four and a half miles from Nijni-Novgorod. The locomotive establishment is to consist of five main buildings, which are now going up. These are an erecting and machine shop, 110x600 feet; a wheel shop, 120x240 feet; a foundry, 135x450 feet; a boiler shop, 120x275 feet, and a blacksmith and hammer shop, 10x120 feet. The plans were prepared by W. F. Dixon, engineer of the works, and the details were worked out in the office of Julian Kennedy, at Pittsburg. Mr. Dixon, for six years previous to September, 1895, was chief draftsman of the Rogers Locomotive Works. The company controlling the new plant is the Russian-American Manufacturing Company, and the capital interested comes from New York, Boston, Philadelphia and Pittsburg. The president is H. H. Hollister, of New York, and the vice-president E. D. Smith, of Philadelphia; the treasurer is now in Russia on the business of the company. The new plant will have a capacity of 150 locomotives a year and will employ 1,000 men.

The tools and machinery were bid on in Germany and England as well as in the United States, but all will be built in this country and will be shipped in September. The aggregate value is \$500,000. Contracts were taken by the following firms:

Betts Machine Company, Wilmington, Del., 15 planing machines, running from 36 to 48 inches square, various lengths, and the larger sizes with four heads, two on the crossrail and one on each upright; six slotting machines, from 12 to 15 inches in size; one horizontal boring and drilling machine and one heavy 50-inch upright drilling machine. Browne & Sharpe Manufacturing Company, Providence, R. I.; Bullard Machine Tool Company, Bridgeport, Conn., two 37-inch boring and turning mills and a number of turret machines; D. Saunders' Sons, Yonkers, N. Y., for two pipe cutting and threading machines, one to cut and thread $\frac{1}{8}$ inch to 2 inch pipe, the other 1 to 4 inch. The machines will be the firm's latest patterns with improvements and will have adjustable expanding die heads. E. Harrington, Son & Co., Philadelphia; Heine Boiler Company, St. Louis; Hilles & Jones Company, Wilmington, Del.; Morgan Engineering Company, Alliance, O., for steam hammers, etc.; Morse Twist Drill Co., New Bedford, Mass., reamers, sockets, taps, etc.; National Machinery Company, Tiffin, O.; Newton Machine Tool Works, Philadelphia, for heavy milling machines, cold saw cutting-off machines, boring machines, etc.; Niles Tool Works, Hamilton, O.; Pawtucket Manufacturing Company, Pawtucket, R. I.; Payne Engine Company, Elmira, N. Y., eight "improved Payne engines," of 30 horse-power each. These engines are of simple centre crank, high speed, automatic type, with cylinders 8x10 inches; Pedrick & Ayer, Philadelphia, Richards open side planers and shapers and several pneumatic appliances. Pencoyd Iron Works, Philadelphia, for a turn table centre; Pond Machine Tool Company, Plainfield, N. J.; Powell Planer Company, Worcester, Mass.; Prentice Brothers, Worcester, Mass., one universal radial drill and one special machine for the automatic drilling of tell-tale holes in staybolts. The latter machine is a two spindle drill, entirely automatic, except that the operator has to keep it supplied with work, so that it will drill the holes as fast as the bolts can be put in and taken out. Rand Drill Company, New York, for air compressors; Riehle Brothers Testing Machine Company, Philadelphia, one 100,000-lb. automatic and autographic vertical screw power testing machine, with screw beam, graduated in kilograms, and one double headed specimen miller for preparing test specimens; Tabor Manufacturing Company, Elizabeth, N. J.; Warner & Swasey, Cleveland, for brass working machinery; Whiting Foundry Equipment Company, Chicago, for cupolas; Wilbraham-Baker Blower Company, Philadelphia; William Sellers & Co., Inc., Philadelphia, for cranes. Electricity and compressed air will be largely used for power to run the shops. The buildings will be piped so that compressed air can be used for the hoists, portable tools, and wherever it is advantageous.

Aluminum Bits.

A NEWARK, N. J., manufacturing concern has put on the market an aluminum bit, which is not only superior in a number of ways to bits of other metals, but also bespeaks for the usefulness of aluminum for saddlery hardware. The aluminum bits are made in the different varieties produced by the firm in iron and steel, but while the nickel-plated iron coach bit weighs 1 pound and 6 ounces, the aluminum bit weighs but 8 ounces, a fact that will be appreciated by every horse.

The aluminum bit has been tested to stand a maximum load of 1,420 pounds, so that it is perfectly safe to drive under all circumstances. Added to the qualities of ample strength, combined with lightness, the aluminum bit has beautiful silvery color, and will not rust. The snaffle bits weigh but $3\frac{1}{2}$ ounces. The aluminum bits are manufactured under patent rights, and the firm has a rush of orders for them.

—Several journals of London, England, are now printed on white paper made in the United States; a New Hampshire paper mill is supplying white paper to a Scottish publishing house, while the *Freeman's Journal*, Dublin, Ireland, has contracted with an Ottawa, Can., paper manufacturer for its regular supply of paper says an exchange. The American continent must ever be the leading factor in the world's supply of white paper.—*The Paper Mill*.

Aluminum in Iron and Steel.

ALUMINUM is used in cast iron in all proportions, from one-quarter of a pound to two or three pounds to the ton, depending upon the grade of iron, the purpose for which the aluminum is added, and the temperature at which the iron is poured, explains *Aluminum World*. The aluminum is introduced into the ladle as the molten iron is being drawn from the cupola or melting furnace.

The use of aluminum in No. 1 foundry iron does not have the same marked beneficial effects as it has in the poorer grades of iron, but it has the decided advantage of keeping the metal molten for a longer time.

Where difficult castings are to be made, where much loss is occasioned ordinarily by defective castings, or where the iron will not flow well, the use of aluminum certainly in these cases will give better work and stronger and more sound castings. The iron will have a closer grain, and hence will be much easier tooled. The effect of the aluminum is to render a certain amount of the combined carbon graphitic and lessen the tendency of the metal to chill.

The most beneficial results of using aluminum are derived when a cheap grade of foundry pig is used or working scrap. The addition of a small percentage of aluminum when the metal is being drawn from the furnace, as described above, is of decided advantage, and a manufacturer of large castings recently stated that in addition to reducing the number of bad castings, there was greater profit by using aluminum. This was owing to the castings having no blow holes, flaws or defects, and thus giving greater weight, which more than compensated for the cost of the aluminum. When the additional saving was estimated of having fewer castings rejected, the manufacturer said he would not cast without aluminum as long as he could get it at a reasonable price.

The use of aluminum in steel is probably more marked, and of more decided advantage, if anything, than in cast iron, although the use in both metals at the present time is looked upon by people that have tried the experiment as being indispensable for good work.

Steel Production in Great Britain and in the United States.

IN this week's issue we give a detailed report showing the production of Bessemer and open hearth steel in Great Britain during 1895. A comparison of the figures there given with those of steel production in the United States brings out some interesting points. Thus we see that in 1895, while the production of Bessemer steel ingots in Great Britain was 1,535,225 tons, the output in the United States was 4,909,128 tons. Great Britain produced 579,386 tons of steel rails last year, while the production in this country amounted to 1,306,135 tons. Comparing the figures for the past two years in both countries we find that Great Britain in 1895 decreased her production of steel rails by something over 3 per cent., the output in the United States was increased almost 28 per cent. In open hearth steel production the figures tell a different story. During the last year Great Britain's output of open-hearth steel was 1,724,737 tons. The production in the United States was 1,137,182 tons, which was 587,555 tons below the British record. The growth of the open hearth process has been much greater proportionately in Great Britain than here. While our proportion of open-hearth ingots to the total increased in 10 years only from 8.8 to 18.8 per cent., the British figures show an advance from 30.7 to 52.9 per cent., more than half the steel being now made by the open-hearth process. Moreover, the basic process has made much more progress in Great Britain than in this country. In 1895 the returns show that of the Bessemer steel ingots 1,093,675 long tons, or 71 per cent., were made by the acid process, while 441,548 tons, or 28 per cent., were made by the basic process. In 1894 the proportions were .74 per cent. acid and 25 per cent. basic ingots. In the making of open hearth steel the basic process has made less advance; in 1895 there were 1,564,868 tons, or 90 per cent. of the total of open-hearth ingots, made by the acid process, while only 159,869 tons, or 9 per cent., were basic ingots. The statement mentioned shows that at the close of 1895 there were 366 open-hearth furnaces in the United Kingdom, with 19 new furnaces in course of construction.

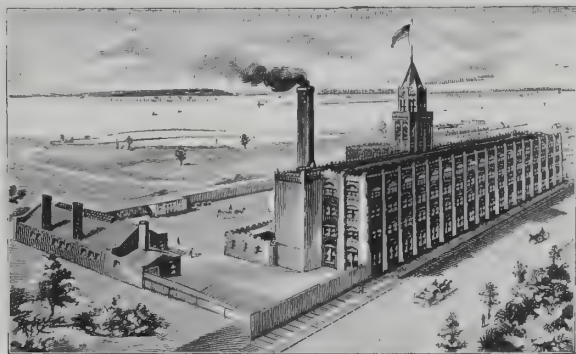
Tempering Aluminum.

IF the report be true that Edison in his experiments with the fluorescent tubes, with which he is manipulating the X rays, has discovered the secret of hardening and tempering aluminum the same as steel, this sonorous and non-tarnishable metal will certainly be worthy of the name "the metal of the future." Cheapness of production is already attained, and hardness has been deemed the one thing needful for its extended utilization. The newly discovered process contemplates the hardening of the metal after it has been "shaped" or placed in position, which will vastly increase the value of the process.

THE application of electric power to the direct driving of all kinds of machinery, the economy, cleanliness, convenience and other advantages are fully demonstrated in many factories throughout the United States. The more progressive machine tool builders have long since realized and fallen in line with the inevitable drift toward this method of operation, but there are still many who shrink from undertaking what they consider a too radical step which the change to electricity involves; but it requires no great power of divination to foresee the time when the countershaft and belt in the machine shop or factory will be looked upon as a relic of barbarism. Electric power in machine shops means more light, greater cleanliness, greater safety to the workmen and all those things that tend toward increased production and better quality of output.

The Largest Water Meter Manufacturers in the World.

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TIME TRIES ALL—METERS AS WELL AS OTHER THINGS.

The Meters made by this Company for all kinds of service have stood this test for many years and have proved their superiority over all others. Over **168,000** in use. The largest and most complete line of Water Meters in the World.

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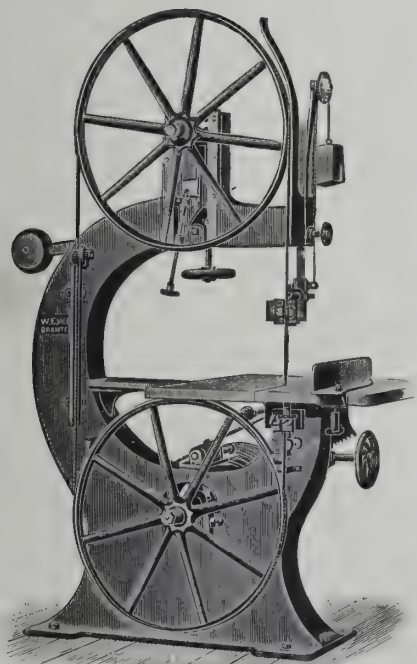
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[AUGUST, 1896.]

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No. 3.—36-inch Wheel. Weight, 2,000 lbs.

BAND RE-SAWS.

No. 5 Band Resaw.—48-inch wheels; saws 24 inches wide, 5 to 40 feet per minute. Resaw swings clear of machine when required. Weight, 4,500 lbs.

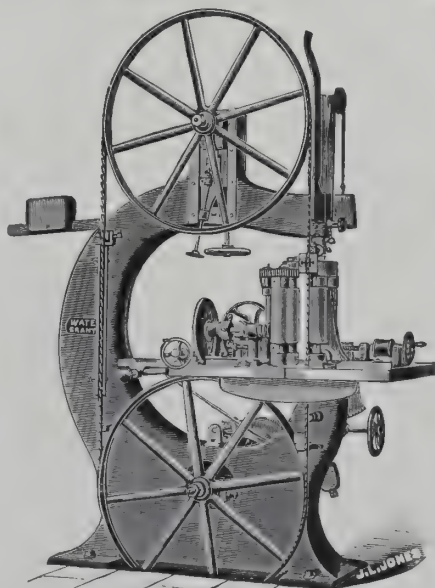
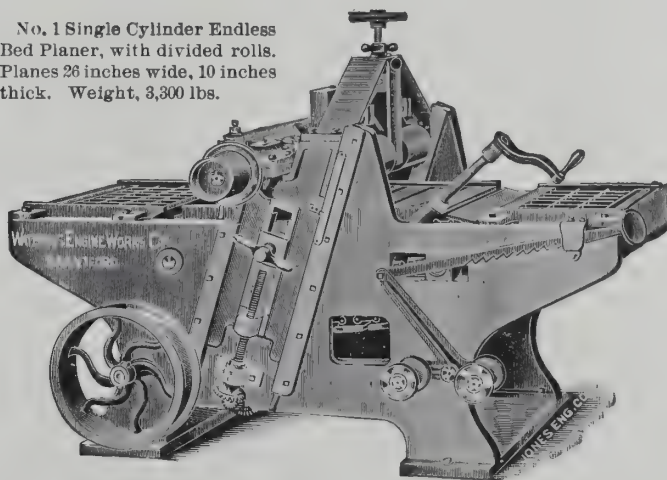
No. 6 Band Resaw.—48-inch wheels; take saws to 3 inches; cuts 30 inches deep. Weight, 4,300 lbs.

No. 7 Band Resaw.—54-inch wheels; 4-inch saws; cuts 30 inches deep and to center of 10 inches. Weight, 5,300 lbs.

OTHER SIZES MANUFACTURED.

FULL LINE OF
Saw Mill Machinery.

No. 1 Single Cylinder Endless Bed Planer, with divided rolls. Planes 26 inches wide, 10 inches thick. Weight, 3,300 lbs.



No. 4.—40-inch Wheels and Removable Resaw. Weight 2,750 lbs.

Wood-Working MACHINERY.

No. 1 E. B. Planer. Weight, 3,300 lbs.; like cut.
No. 1 Double Cylinder E. B. Planer. Weight, 5,300 lbs.
No. 2 E. B. Planer. Weight, 2,600 lbs.
"Champion" Combined Planer, Matcher and Moulder.
Planes 24 inches wide up to 6 inches thick. Best all-around machine.

MANY OTHER STYLES AND SIZES,
AND FULL LINE OF
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January, 1896, we moved into new premises, securing unsurpassed facilities for executing contracts promptly and satisfactorily. Order direct or through your commission house, sending us copy of order.

Saw Mill Machinery Our Specialty.

There are some 300 of our saw mills running in South and Central America, Europe, Asia and Africa, of different sizes, from those cutting logs 6 feet in diameter to small mills sufficiently portable for mule-back transport.

WATEROUS, BRANTFORD,
CANADA.

American Goods Abroad.

THE special London correspondent of the Philadelphia *Public Ledger*, in a recent letter to that paper, says: It is daily becoming more apparent that American hardware, machinery and agricultural implements are coming more and more into competition with those of English manufacture.

To any one who watches the import trade of this country (England) it is clear that American manufactures are increasing in use here, and that the importers of such manufactures are annually adding to their business. Now what are the facts which go to support this statement? They are very clear and unmistakable. First, the value of American agricultural implements imported from the United States into England has risen from \$322,895 in 1887 to \$757,715 in 1895, while the total value of American exports of such implements to all countries has risen during this period from \$2,427,000 to \$5,319,000, a pretty certain indication that foreign buyers want these implements.

A similar expansion is noticeable in the receipt of steam engines and general machinery, the value having risen from \$1,127,000 in 1887 to \$4,611,724 in 1895, or more than double. In fact, if we take the total value of American steam engines and machinery under this heading, there has been an increase from \$5,668,000 to \$14,856,583, which is in itself sufficient evidence of the excellence of American manufactures of this description. Anyway, such an expansion shows that the world wants American machinery, and England is no exception to the rule.

As regards builders' hardware and tools (for which statistics are not available prior to 1890), America sent us in that year goods to the value of \$594,500, while last year we received \$857,417 worth from the same source. In this case, also, there has been an increase in the value of the total exports from \$3,907,000 to \$4,778,532. We also have received large quantities of sewing machines from America during the last six or seven years, the amounts varying from \$700,000 to nearly \$900,000 per annum. The sewing machine is, of course peculiarly an American specialty, in the same way as the typewriter and the axe. Practically three quarters of the typewriters in use in London are of American design.

We have not yet come to that stage when the customs authorities take notice of the quantities of pig iron imported here from the United States, and this being the case I cannot say definitely what the values are, but every one engaged here in the iron trade is aware that shipments have been made on several occasions, and that they may eventually reach that important position when their values will be separately reckoned. It was not so long ago that 2,000 tons of nails made in America were sent to the midland counties, the very centre of the nail-making industry in England.

We must not forget that America has the command of cheaper coal than we have. That fact is well recognized here. The average value at the pit's mouth of the British coal output has been returned at \$1 93 per ton for years past, while that of the United States in 1893 was returned at about \$1.00 per ton. We have already had several shiploads of American coal landed here, and, with cheap freight and a tendency to lower wages in America, there is no reason why not only coal, but iron also, should be sent to England from America. When the United States producers appreciate the value of economizing the waste and coarser forms of fuel, thereby reducing the cost of production, we shall be at still further disadvantage. This question of economizing in manufacturing was considered some little time ago in America, and it was found that for every ton of anthracite coal mined and marketed in Pennsylvania one and one-half tons are wasted, and the loss in bituminous coal, although somewhat less, is said to be enormous. A rigid economy in this direction is practiced on the European Continent, and it is for this reason, among others, that German iron and steel makers have been able to face without disaster the declining prices in the metal markets of the past four years. Now if America can send us pig iron under her present lavish system of mining, what will she be able to do when her manufacturers follow the example of the German makers? I believe that this matter is already receiving careful attention in the States, and it may eventually have results of a decidedly unpleasant nature for English manufacturers.

All these facts are quite well known and appreciated here. The knowledge causes some anxiety to the thoughtful English manufacturer. Of course, it must not be imagined that because America has been able to send shipments of pig iron to England therefore pig iron makers in the United States are at once going to swamp the English market, or, indeed, are instantaneously going to open up a very big market. The exportation of pig iron to England from the United States has been rendered possible in consequence of the utterly anomalous condition of industrial affairs in America, whereby the cost of production, the stagnation of trade and the lowness of prices in America rendered such an experiment possible. It has been recognized here, too, that such a state of affairs would pass away temporarily and that prices would rise, thereby rendering the English trade undesirable. But every cycle of depression—and such periods seem to be recurring at regular intervals—tends to bring American prices more and more in accordance with European requirements. There does not seem to be any reason, therefore, to doubt but that in the future—possibly the near future—when conditions on both sides of the Atlantic have become more similar, America will enter into serious and permanent competition with England for the supply of pig iron, etc., and at the same time successfully compete with Great Britain for the supply of manufactured metal goods in the markets of the world. The United States have a higher game to play than merely to supply raw products for other countries to manufacture. With inimitable factories and methods of production the United States will aspire to successfully become the largest manufacturing nation.

The central fact is this, that England seems to be reaching—if, indeed, she

has not already attained—her minimum cost of production, while, on the other hand, America appears to be still a long way from this undesirable position and is constantly finding means by which she can reduce the cost of production.

Aluminum Roofing.

A SAN FRANCISCO CAL., paper reports that Frank Weitman, a skilled metal worker of that city, recently sailed for Guatemala City to fulfill a contract with the Guatemalan Government to cover the roof of the Houses of Congress with aluminum. The work will be unique of its kind, both on account of the novel application of aluminum to roofing purposes and the scale on which the experiment is to be made. It is said that the lightness of aluminum was the main reason why that metal was chosen for the Guatemalan capitol, as the roof is immense and the spans of more than ordinary extent. It is estimated that it will take a large force of men from eight months to a year to complete the covering. In reference to the above item of news, President Hunt of the Pittsburgh Reduction Company advises us that they have, through their San Francisco agency, recently shipped some sheet aluminum to Guatemala, presumably for the purpose named.

The outcome of this experiment will be awaited with interest. Although the suitability of the metal for roofing purposes has been suggested, we do not know that any practical steps have been taken in this country to test its advantages in this connection. Two obstacles seem to stand in the way of any extended adoption of aluminum in roofing construction at present. These are its cost—which is slightly greater than that of sheet copper, gauge for gauge—and the absence of any really efficient and reliable aluminum solder. It is likely, however, that both these drawbacks will be overcome in the course of time.

Compressed Air for Street Cars.

THE Worcester *Gazette* tells of the progress of the work on the new system of street cars propelled by compressed air which is going on in that city. It is known as the high-pressure system. The cars run in Europe have a pressure of a little over 400 pounds, while on these it is proposed to have a high pressure of 2,000 pounds to the square inch on the cylinders. This would reduce the size of the cylinders and make it possible to entirely conceal them under the seats. In European lines there are huge tubes carried under the cars, which give an ungainly appearance, add to the weight and increase the chance of accident. Thus far compressed air cars have been charged sufficiently for runs of about eight miles, while it is proposed to give the storage in these a capacity to run 20 miles without refilling. The charging will take only a minute or two, and it is proposed to have compressed air conduits along the tracks, with hydrants at intervals, so the cylinders can be charged by stopping a moment on the route. The regulator and brake are to be separated as in the trolley car, and will be of such a simple pattern that an ordinary motorman can manipulate them. Instead of using the compressed air for the brakes, as in previous systems, it is proposed to reverse the power when necessary to stop. The motor operated by compressed air follows the steam engine more than an electric motor, but the impulse is given by springs which are squeezed by the air and free themselves. The promoters are satisfied that the element of danger has been eliminated by constructing tough cylinders.

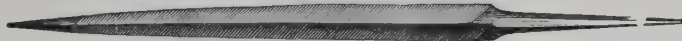
Improved Drill for Coal Mines.

THE "Jumbo" auger drill is the invention of a Kansas miner which prevents blown-out shots and reduces the amount of slack coal. The tool referred to will bore a large hole in front of a small one; that is to say, in preparing a hole for a shot, the end of it, the hole, is of greater diameter than the bore. All intelligent miners will appreciate the great advantage of being able to place their explosive in a compact mass at the bottom of a small, deep hole, and this is done by the "Jumbo" auger. Unlike the common drill, the "Jumbo" reduces the percentage of slack more than one-half; it is in fact essentially a lump coal maker. By concentrating the powder at the bottom or end of the drill hole two pounds of powder are made to do the work of three pounds, and more effectively too. It takes no more time to drill a hole and prepare it for a charge than with an old-style auger bit, and it is made of a single piece of tool steel, having neither springs, levers, nor loose parts; it is practically unbreakable. It can be worked by electrical, air or hand power on any rotating machine, is self-cleaning in up or down holes, and works equally well in either wet or dry coal. It is guaranteed to automatically bore a 4½-inch powder chamber in rear of a 2½-inch hole larger or smaller proportionately, in coal, clay, salt, gypsum or any other material in which augers can be used.

THE ST. JOSEPH PUMP & MANUFACTURING COMPANY, St. Joseph, Mo., manufacturers of the Perfection Water Elevator and Purifying Pumps, favor us with a copy of their catalogue No. 8, which is just off the press. The catalogue contains a full description of their line of pumps showing the various styles made by them. Attention is drawn to their Perfection Irrigating Pump, which has a capacity of from 80 to 5,000 gallons per minute. This pump is referred to as being simple in construction, cheap and durable, and can be operated by horse, steam, gasoline, windmill or motor power.

—English editors are warning English bicycle makers that unless they reduce the weight of their machines, which are seven pounds heavier than the best American types, and adopt the American saddle and other improvements, they will lose the home market in competition with the Americans.

TEST THE STANDARD FILES OF AMERICA.



WE WILL DELIVER
at any steamer in New
York a case containing
one dozen each of the
following Files on re-
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12-inch Flat Bastard.	8-inch Mill Bastard.
10 " Square "	4 " Taper.
8 " Round "	8 " "
8 " Hand Smooth.	8 " Double Ender, Handled.
10 " 1/2 Round Bastard.	13 " Horse Rasp.

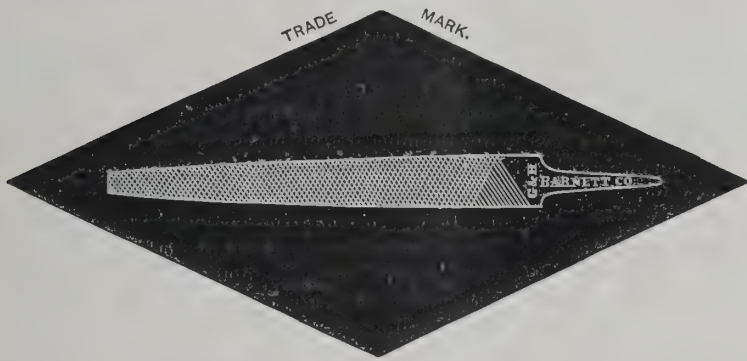
Gross Weight, packed, about 75 lbs.

NICHOLSON BRAND.....\$12.50, or £2 12s.
AMERICAN ".....\$10.50, " £2 4s.

Send draft on New York or London.

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LARGEST PRODUCERS OF FILES AND RASPS IN THE WORLD.

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GENERAL OFFICES & WORKS, PERU, IND.

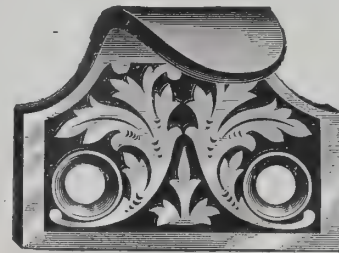
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Several Different Styles.

Light!

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Light!

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Send for price list illustrating these and a great variety of
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C. L. HAUTHAWAY & SONS' SPECIALTIES.



PATENT LEATHER POLISH

For polishing patent leather
shoes quickly and with-
out injury to the
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PRICE, - \$9.00 PER GROSS.

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THE
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Is the only Dressing in the world
that does not contain Ammonia.
and it positively contains oil.

PRICE, - \$24.00 PER GROSS.

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Best Dressing put up at this price, and
warranted in all respects.

PRICE,
\$7.50
PER
GROSS.



The Boss Dressing

Is the GREATEST CLEANER
known for Russet or Colored
shoes. Will remove all stains
and dirt and make the shoes
as good as new.

PRICE, - \$12.00 PER GROSS.



RUSSET LEATHER POLISH

For polishing Russet and all
fancy colored shoes.

Produces a lasting lustre.

PRICE, - \$9.00 PER GROSS.

American Shoes in Germany.

CONSUL-GENERAL MASON reports to the Department of State that conditions favor an important increase in the exports of American shoes to Germany. From this report we make the following extract, as tending to show the superiority of American made shoes, and the importance of adhering to American qualities and styles, instead of trying to suit everybody, and thus lowering the standing and degrading the name "American," in order to gain temporary trade. Mr. Mason says:

"The fact has become recognized by a constantly increasing number of people in this country, that in respect to certain specialties of manufacture, including chrome-tanned upper leathers and factory-made shoes, the Americans held a clear and undisputed lead over all other manufacturers, not excepting these of Great Britain, to whom Germans have long been accustomed to look for standards of excellence. English-made shoes are generally substantial and comfortable, but those of the best American makes are not only all this, but have besides an elegance of form and finish hitherto unattained, except by a few high-priced custom shoemakers in London and Paris. While the wages of shoe manufacture are higher in the United States than in any part of Europe, our manufacturers enjoy three distinct advantages over all competitors, viz., better and cheaper upper leathers, superior machinery, and factory system so perfect as to more than balance the greater initial cost of their more skillful and more efficient labor. The net result of all these facts and conditions is the opportunity which to-day presents itself for a large and permanent increase of American shoe exports to Germany.

"From a practical standpoint the subject involves the two usual questions: What special kinds of goods are best adapted to meet the existing demand, and how best to organize and conduct the business?

"From the most trustworthy information that can be obtained, the obvious demand of the present market is for specialties like the 'Douglas' and 'Good-year welt,' shoes of good form and medium price, such as are retailed at home for \$2.50 and \$3.

"Next in importance would be good common shoes for working people of both sexes, double-soled and made from split or light single upper leather. There is an especial need of good, well-made shoes of somewhat lighter quality and medium price for boys in town and country, who attend school during the years which precede the age of military service.

"Finally the higher grades of walking shoes in black and brown chrome-tanned leathers, as well as fine enameled dress shoes and high-laced bicycle boots for ladies, such as are now retailed in the United States for \$3.50 to \$5 per pair. All these kinds of American-made shoes, if properly introduced and pushed, would, in the opinion of good judges rapidly supersede the relatively clumsy and inferior homemade goods of the same classes with which the German market is now principally supplied.

The more advanced German tanners have, to a large extent, adopted American machinery and methods. The importation and local manufacture of American shoemaking machines is fully established in this district, but it will probably be many years before German factory-made shoes and certain classes of upper leathers will reach the high standards of quality and cheapness that have been attained in the United States, and the opportunity that is meanwhile offered to our shoe manufacturers is one that should not be lost.

"The duty on ready-made shoes imported into Germany is 60 marks (\$14.28) per 100 kilograms (224 pounds), which is certainly not an excessive tax, especially on the finer and lighter qualities, the duty on which will not, at present rates, exceed 12 to 20 cents per pair."

Seattle the Winner.

THE announcement that a contract has been signed between representatives of a big Japanese steamship line, the Nippon Yuzen Kaish and President Hill of the Great Northern Railroad Company, and that Seattle is to be made the terminus of the line, has caused great rejoicing in Seattle. The Nippon Yuzen Kaish is the Royal Mail Steamship Company of Japan, and has in the neighborhood of 50 vessels, representing 50,000 tons carrying capacity. They are building 10 ships of 5,000 tons each, bringing their total carrying capacity up to about 100,000 tons. The first ships to come to this port will not be the regular vessels, but suitable ones designed for this trade are being built in England.

The coming of this line to Seattle settles for all time the dispute as to what city will be the Pacific Coast terminus of the Great Northern Railroad. The steamers of the Northern Pacific Line will also start from there and enlarged docking facilities are already under way. The contest to secure this prize was between Seattle, Tacoma, Portland, San Francisco and San Diego.

It is also stated that Mr. Asano, the President of the Eastern Steamship Company, which was incorporated a few weeks ago, left Yokohama on the 10th inst. for Vancouver. The Eastern Steamship Company will run from Yokohama to New York and Philadelphia via the Mediterranean. The company intends to order four steamers of about 6,000 tons for the service and it is understood that Mr. Asano is coming to this country with the intention of placing orders here if satisfactory terms can be made.

—Revised statistics place the number of machinists in the United States at 200,000, toolmakers 10,000, boiler makers 25,000, pattern makers 10,000, stationary engineers and firemen 150,000, locomotive engineers and firemen 100,000, electric railway and light employees 50,000, and civil, mechanical, electrical and mining engineers 50,000.

Gas the Future Fuel.

ACCORDING to Thos. A. Edison we are on the eve of radical changes in lighting and heating, and more especially in heating. He thinks the next three or four years will see a remarkable decrease in the cost of electric lighting and a complete revolution in the method of heating. His idea is that electricity will be made so cheaply that it will not be possible for gas to compete with it as an illuminating power. Gas will then be put through but the one process, and used for heating altogether.

Mr. Edison is too smart a man to make any such remarks without due consideration, and we think that the language he used has been misconstrued or he is misquoted when he is reported as saying that within the century electricity will supersede coal for heating purposes. That it will eventually come is beyond a doubt, but not this side of A. D. 1900, and owners of coal mines and coal operators are not borrowing any trouble on a subject which threatens to drive them out of business. The following is an extract from the notebook of a New York *World* reporter detailing a recent interview with Mr. Edison:

"Do you then think that we are on the eve of an important change in electric lighting?" was asked.

"Yes," answered the wizard. "We will make electric lighting cost so little that gas"—and Mr. Edison smiled here—"won't be in it."

"What then will become of the gas?"

"Gas will be relegated to its proper place," said Mr. Edison, "and will be used for fuel altogether. Instead of a man getting in five or ten or fifteen tons of coal at a time he will simply have a gas pipe put into his house and have his fuel on tap all the time."

"Won't gas be too costly for that purpose?"

"No," answered Mr. Edison. "You see at the present time gas, after it is first made, is put through a process to prepare it for illuminating purposes. The first cost of gas—just the ordinary crude gas—is very small. It is the second process that makes it cost so much. Without going through the second process the gas is of no value for illuminating purposes. But in its crude state it will give an abundance of heat without light."

"Then you think gas will supersede coal and steam for heating purposes?"

"Well, to a great extent. It will become the common fuel among the great masses of the people. It will be practically the only method for domestic heating and will be utilized altogether for ordinary domestic purposes. I am not so sure, however, that it will come into such general use in the business part of the larger cities. In big office buildings, for instance, steam may be retained to run elevators and heat the building at the same time—that is, in the very large buildings."

"Large buildings such as—"

"Well, any of the very large buildings such as are common on lower Broadway," interrupted Mr. Edison.

Soap Making.

THE United States may justly lay claim to be the greatest soap manufacturing country of the age. The enormous needs of 70,000,000 people in this respect, who, as a nation, are fully cognizant of the virtues of soap, appreciating the article as an indispensable adjunct of civilization, necessarily places this country in the first rank in the industrial line under consideration. England manufactures soap on a very large scale also, not only for the home trade, but also for export. But the aggregate falls far short of that which is annually produced by the United States, which latter country, by the way, cuts an unimportant figure as a soap exporting country.

Exports of soap from England and France form very important items in developing and maintaining the industrial resources of this especial product. The superiority of the goods manufactured and exported by the latter country have established a world-wide reputation, French soaps of the higher grade being hard to surpass.

It is interesting to observe the difference in the methods pursued by the American and English soap manufacturers in placing their goods on the market. In England the practice consisted formerly of marketing the goods in long bars, while here, as is well known, the soap is sold in well-formed tablets, which are at once presentable as a salable commodity, while being in very convenient form for subsequent use. To-day the long bar system prevails largely in England, but as "imitation is the sincerest flattery," we must conclude that our practice in this respect is of a superior character, for the reason that it has been adopted by a number of the leading makers abroad, and is rapidly gaining in favor. It is, however, a matter of surprise that the tablet system has not superseded the long, bar system in Europe many years ago, as the latter, with their sharp edges, are decidedly inconvenient for use, considerable rubbing being required to round them off.

WE are reminded by an advertisement of a German shop in an English exchange, that along about World's Fair time this German firm—which, by the way, had quite an exhibit at the fair—announced its intention of starting a branch salesroom or something of the kind in this country, from which to sell German-made wood-working machines right under the noses of American machine builders. But somehow the scheme didn't work out properly. Perhaps the exhibit aforesaid wasn't considered any great shakes. Then, again, perhaps the fact that the German tools looked suspiciously like they had been copied from American tools led the projectors of the enterprise to believe that Americans would hardly buy copies when they could just as well get the genuine article. Anyhow, the sales agency never developed beyond the wind state.



Puritan Highest Grade Bicycles.

UNEQUALLED AND UNAPPROACHED IN
DESIGN, MATERIAL AND CONSTRUCTION.

Most Popular Wheel for Export.

LIGHT. STRONG. FAST.

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MANUFACTURERS.



Johnston's Standard Kalsomine and Fresco Paints,

Ready for Use!

FOR WALLS AND CEILINGS.

Absolutely Reliable!

GOLD MEDAL, NEW ORLEANS, 1884-5.

EIGHT FIRST-CLASS AWARDS.

Cheaper than Wall Paper or Oil Paint.

Pure White and Beautiful Tints. Will not rub or scale from the wall. Invaluable in cleansing and disinfecting walls impregnated with germs of disease. Mixed in five minutes ready for the brush, by the addition of water only. Five pounds will cover with a good body 500 square feet on hard-finished walls. Send for sample card and prices to

DRY KALSOMINE AND FRESCO PAINT WORKS, 82 & 84 Washington Ave., Brooklyn, N. Y., U. S. A.

Orders filled through commission houses. Correspondence solicited. Catalogue "J" on application.

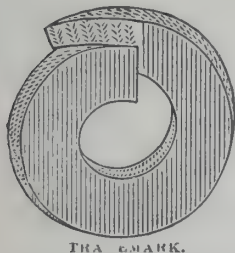
Twist Drills made by this Company are **HOT FORGED** by an Entirely New Process.

Bit Stock Drills,
Taper Shank Drills,
1/2 inch " "
3/8 inch " "
Drills, fitting ratchets
Etc.



They are **TOUGHER** and **STRONGER** than the **OLD STYLE** Milled Drills.

Catalogues sent free
on
Application.



COULD'S STEAM AND WATER PACKING.

Patented June 1, 1880.—The Original Ring Packing.

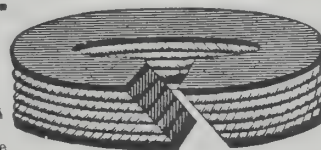
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM
SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE COULD PACKING COMPANY, EAST CAMBRIDGE, MASS.

ORIGINAL RING PACKING.

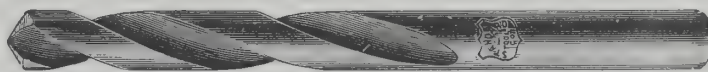


ALBION CHIPMAN, Treas.

The STANDARD TOOL COMPANY, Cleveland, Ohio, U. S. A.

MANUFACTURERS OF

Increase Twist Drills.



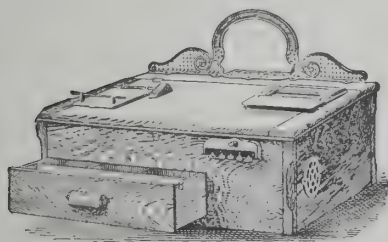
CATALOGUES SENT FREE ON APPLICATION.

Bit Stock Drills for Metal or Wood, Taper and Straight Shank Drills, Reamers, Sockets, Chucks and extra length drills for Electrical work.

A BUSINESS MAN IS GUILTY

Of gross neglect if he takes in and pays out money without keeping a careful record of it. There is nothing like an autographic cash system to keep a merchant posted. You can't forget to enter the transaction! The money drawer won't open if you forget.

HOUGH CASH RECORDER CO., Springfield, Mass., U. S. A.

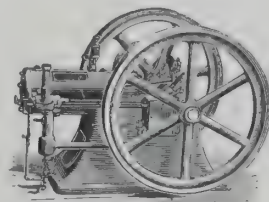


WEBER GASOLINE ENGINE

cubic feet gas per horse power per hour. The simplest, most economical and best power. No engineer required; no coal; no fire; no danger. Sizes, 2 to 50 horse power. (Special attention paid to secure packing in heavy cases for export). Goods delivered New York, San Francisco or New Orleans. Cable Address, "Webergas," Kansas City. State size wanted.

WEBER GAS & GASOLINE ENGINE CO., 425 S. W. Blvd., Kansas City, Mo., U. S. A.

for use in any place or for any purpose requiring power. Only a few minutes' attention required each day. Guaranteed cost of operation is one-tenth of a gallon of 74° Gasoline, or 17



Bernard's Patent Paragon Plier, Manufactured by The Wm. Schollhorn Co.,

NEW HAVEN, CONN., U. S. A.

9 inches long.



THE BOSS TOOL FOR BUILDING WIRE FENCES.

This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

Manufacturers of the Celebrated "Star Brand" Shears and Scissors, and "Elm City" Shears in large variety.

BEST QUALITY ONLY.

Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

Where Our Rubber Exports Go.

THE value of exports of "India rubber goods" from the port of New York for the four weeks ending May 26th was as follows, according to the custom house returns:

Belgium.....	\$350
Denmark.....	293
England.....	6,561
France.....	4,511
Germany.....	6,148
Holland.....	2,000
Italy.....	4,500
Switzerland.....	263
British North America.....	154
Mexico.....	1,760
Central America.....	715
West Indies—British.....	309
Dutch.....	10
Spanish.....	712
Hayti.....	108
St. Domingo.....	55
Argentina.....	30
Brazil.....	496
Chile.....	620
Colombia.....	1,011
Ecuador.....	507
Peru.....	206
Venezuela.....	217
British Africa.....	1,255
China.....	197
Japan.....	2,912
British East Indies.....	89
Australia.....	2,415
Tasmania.....	17
New Zealand.....	757
Total.....	\$39,178

These figures, by the way, do not include the whole export of goods from the port of New York alone in which India rubber forms a part. They do not include clothes wringers, electrical material, dental material, bicycle sundries, and a large number of other items involving more or less rubber. The appraised value of bicycles exported is between \$40,000 and \$50,000 per week, and they are all equipped with India rubber tires. Then there is the item of dress shields, some of which, at least, contain rubber, of which there were exported in a single week, together with smaller lots, \$1,419 worth to Liverpool, \$1,027 to Southampton, \$1,020 to Hamburg, and \$357 to Antwerp.

A Useful Suggestion to Exporters.

THE attention of manufacturers and merchants who solicit business by means of catalogues and price lists mailed to South America, Mexico, France, Germany, Italy, Austria and the far East should be called to the importance of giving measurements of their articles of merchandise by the metric tables of weight, capacity and dimensions. Of late an enormous demand has set toward our country for steam, electric, compressed air and hydraulic machinery, mechanics' tools, shelf and builders' hardware, pipe, valves, gauges, surgical instruments, steam engines, furniture, silver and plated ware, metal and glass lamps and manufactures of leather and cotton. The only drawback against us is the fact that millions of foreign buyers are unfamiliar with the English tables of weights and measures used throughout the United States.

This being the case, many orders which call for goods which we make better and cheaper than British or Continental makers are sent to Europe, wholly because the buyers do not understand our measurements. A large machinery-making concern in New England doubled its exports in the first six months of 1895 over any previous year, by sending to South America catalogues giving measurements by the metric system. A large concern organized in this country to manufacture United States types of locomotives at Nijni-Novgorod, Russia, and which has just bought over \$2,000,000 worth of machinery in the United States, has found it absolutely necessary to adopt the metric system for use in its business which will be largely in Asiatic countries.

The adoption of this system by our manufacturers doing business abroad will bring an increase of business of not less than \$10,000,000 a year in the metal working trades alone. It is worth thinking about.—*G. Wilfred Pearce, in the New York Sun.*

Car Heaters for England.

THE S S. Britannic took to England on July 22d a large consignment of American car-heating apparatus. This shipment, which was made by the Gold Car Heating Company, of New York, is remarkable because of the fact that it was made possible by the high degree of efficiency of American processes of manufacture as compared with the English.

The shipment is sufficiently large to equip 500 English railway coaches. It is understood that the famous "Flying Dutchman" train is to receive a portion of it.

These heaters are manufactured, all freight paid, and delivered at inland points in England in competition with English manufacturers.

—Now America has begun to export art glass, in the form of complete stained windows, to European countries that have long been famous for their fine work in that line. And the industry was not developed here under the fostering influence of a prohibitive tariff, either.

Watches in the United States.

IN this country almost everybody carries a watch. Probably nine-tenths of the men, and great numbers of women, and many young people carry watches. In the best trade of the city many more watches of gold are sold than of silver. Of all the watches sold throughout the country about 25 per cent. are of gold. The percentage of gold watches is increasing.

The fashionable watch of the day is open-faced. The sale of open faced watches is increasing, especially in fine watches, but it is increasing also in other grades. Of fine gold watches sold in the city probably two-thirds are now made open-faced. Of all the watches sold in the United States, gold and silver, probably from a quarter to a third are now made open-faced.

The modern watch has for one of its characteristics, thinness. A man's watch, which is now made more especially to wear with evening dress, and is all the time growing in favor, is a plain, thin, open faced gold watch, which takes up but little room in the pocket. Perfect in its simplicity, this watch is at the same time of fine workmanship and great beauty. It sells at \$190. A gold watch not so thin nor so finely finished, but a very handsome, modern watch, and an excellent timekeeper, by the same makers and bearing their name, can be bought in open face, the case of 18-carat gold, for \$65; in double case for \$70.

But gold watches, and good watches, too, can be bought for very much less than these prices; in fact, there never was a time when watches generally were made in such tasteful shapes, or when they were so good for the money, or so cheap as now.

Taking all the grades together, the American production of watches is about 4,000 daily. One might at first wonder what becomes of all these watches. A great number are taken up annually by the new buyers coming into the market for the first time, out of the constant and large increase in the population. Great as is the percentage of watch owners now in this country, it is also increasing. Many immigrants buy watches as soon as they get the money; some men own more than one watch; watches wear out, or their owners lay them aside for a better watch or for one of newer style; watches are lost and destroyed; and when one comes to take all things into consideration it will be seen that the great production of watches may be in a large measure easily accounted for.

The Development of American Industries.

SOME remarkable figures have recently been published to show the extent of electrical development, from which we take the following:

There are in existence to-day 2,500 stations supplying arc lights, as many more supplying incandescent lights, and over 7,000 private plants. The capital invested in lighting companies is \$325,000,000, and in private plants \$200,000,000. The number of arc lights in use is over 25,000, and 75,000 incandescent lamps are manufactured per day. \$100,000,000 is invested in electric mining machinery, and \$60,000,000 in electrical motors for driving stationary machinery, the total number of electric motors in use for all purposes being believed to exceed 500,000. The electric elevator, which has hardly begun to attract public attention, is in use in this city alone to the number of 600.

The greatest single line of development is, of course, the electric railway, of which there are in existence to-day 12,000 miles of track equipped with 25,000 cars, and having a combined capital of over \$700,000,000. The rate of investment in the various applications of electric power during the past nine years has been at the rate of \$100,000,000 per year, while the total number of people who earn their livings in connection with the electrical industry is 2,500,000.

There seems to be no room for doubting that in this field this country leads the van—a fact which is fully recognized by foreign periodicals. We have about nine-tenths of all electric railways, while the use of the electric motor in other countries has scarcely begun. In electric lighting, both arc and incandescent, we are far ahead, while electric elevators are as yet scarcely known in Europe. It is probably true that there is more capital invested in the various electrical industries in this country than in all the rest of the world combined.

American Laundry Machinery in France.

AFTER all that has been said and written on the subject of washing machinery, particularly of its use in America, it will not be out of place to give some figures of the results obtained from the American machines, by which some light on the subject may be obtained. In fact, this is the only way to demonstrate clearly who is right and who is wrong—those who attack American machinery or those who defend it. We cannot do better than give extracts from the official reports of the laundry attached to the county building at Nanterre. The machinery is American and has been in use two years. In a period of 11 months 579,124 kilos of linen had been washed, at a total cost of 22.196 francs 78 centimes, which means a cost of 3 francs 83 the 100 kilos—i. e., about 76 cents American money for every 220 pounds avoirdupois. It must be added that the saving effected in wear and tear of linen is estimated to be 12½ per cent. on the old method. It can definitely be asserted that such a low price has never been obtained before, which should put an end once and for all to all discussion, and demonstrate clearly the advantages of American machinery.—*Journal des Blanchisseurs et Buandiers de France.*

—Coffins are now manufactured from paper pulp which when stained and polished are equal in appearance to those made of wood, and are more durable and much less expensive.



DR. J. C. AYER & CO.'S STANDARD FAMILY MEDICINES.

Approved by the Profession.

Full directions, in various languages, accompany each bottle of our medicines.

Ayer's Cherry Pectoral,

For the rapid cure of Diseases of the Throat and Lungs.

Ayer's Sarsaparilla,

For purifying the Blood and the cure of Scrofulous Diseases.

Ayer's Ague Cure,

Warranted to cure all Malarial Disorders.

Ayer's Hair Vigor,

For Restoring gray hair to its Original Vitality and Color.

Ayer's Cathartic Pills,

The most valuable Home Remedy for all Purgative Purposes.

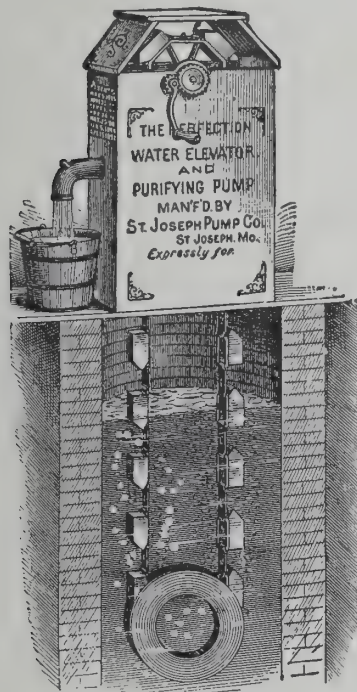
Prepared by Dr. J. C. AYER & Co., Lowell, Mass., U. S. A. Dealers liberally supplied with almanacs, show cards, and other advertising material.

THE WORLD-RENOVED

"Perfection Water Elevator AND Purifying Pump."

A Sure Preventive against Malaria, Typhoid and Other Fevers.

THE EXACT PUMP FOR YOU.



The Celebrated "Perfection Water Elevator and Purifying Pump" is the only bucket pump on earth where the chain or buckets are made of strictly one piece of black open hearth steel, folded together by double lap seams, and the entire product galvanized after it is constructed. Guaranteed for ten years. The storage of waters in cisterns and open wells is the method largely adopted throughout the world for drinking, cooking and bathing purposes.

THIS PUMP IS GUARANTEED TO PURIFY THE FOULEST WELL OR CISTERN IN TEN DAYS' ORDINARY USAGE.

How does it purify?

Each bucket descends full of air and ascends full of water. For each gallon of water drawn a gallon of air or oxygen (the vital element) is circulated through the water from the bottom to the top. This not only thoroughly agitates, ventilates and purifies the water, but also forces a large supply of oxygen which is sufficient to consume all impurities or organic matter in the foulest water. It is an admitted fact by thousands using them, that this Purifier is the only Pump that will destroy wigglers, water bugs and water lice, and make foul or stagnated cistern water pure and sweet, removing all color, bad taste and smell. After a few days' usage or the "Perfection," the old flatness and insipidity in water are replaced by a sparkle like that of a mountain stream. In fact, it will make bad water good, and good water better.

All foreign shipments delivered for export f.o.b. car, N. Y. Write us for catalogue and book of information on impure water.

MANUFACTURED ONLY BY

ST. JOSEPH PUMP & MFG. CO.

ST. JOSEPH, MO., U. S. A.

Water for the Home, Farm AND Ranch!

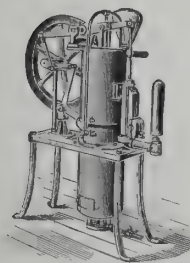
WATER YOUR STOCK,
WATER YOUR LAND
AND WATER EVERYTHING
DEPENDENT UPON WATER

WITH THE

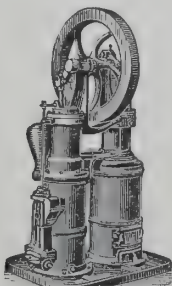
DE LAMATER-ERICSSON
HOT-AIR PUMPING ENGINE

AND THE

DE LAMATER-RIDER
HOT-AIR PUMPING ENGINE.



De Lamater-Ericsson.



De Lamater-Rider.

No Other Means so SAFE, SIMPLE, ECONOMICAL and RELIABLE

Windmills are Uncertain, Unsightly and Destructible.

Rams require favorable conditions and waste water.

Steam Pumps require skilled labor and lots of fuel.

Hand Pumps require hard labor and lots of it.

Gasoline Engines are a disappointment to both the makers and purchasers.

Buy a Hot-air Pumping Engine and you will be Satisfied, Contented and Happy.

DE LAMATER IRON WORKS,

CATALOGUE.

467 WEST BROADWAY, NEW YORK, N. Y., U. S. A.

THE HARRINGTON & KING PERFORATING CO. CHICAGO.



METALS PERFORATED AS REQUIRED FOR

SCREENS OF ALL KINDS

FOR USE IN

Milling and Mining Machinery,
Reduction and Concentrating Works,
Woolen, Cotton, Paper and Pulp Mills,
Rice, Flour and Cottonseed Oil
Mills,
Sugar and Malt Houses,
Distilleries, Filter Presses,

Stone, Coal and Ore Screens,
Stamp Battery Screens,
Brick and Tile Works, Filters,
Spark Arresters, Gas and Water
Works,
Oil, Gas and Vapor Stoves,
Coffee Machinery, etc., etc.

STANDARD SIZES PERFORATED TIN AND BRASS ALWAYS IN STOCK.

Main Office and Works: No. 218 North Union St., Chicago, Ill., U. S. A.

Eastern Office: No. 284 PEARL STREET, NEW YORK.

ARCHITECTURAL SHEET METAL WORKERS



Enhance the beauty
of your dwellings and
business houses with
metal trimmings.

Pediments, Cornices, Window and Door Heads, Bay Windows, etc., of sheet metal (galvanized, iron or copper) are handsome, light and inexpensive. We have furnished the export trade satisfactorily for years. Write us for information and estimate.

Gara, McGinley & Company,

25 So. 17th St., Philadelphia, Pa., U. S. A.

New Jersey Copper Paint

LEADS THEM ALL,

So our testimonials say.

We guaranteed this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from American Institute, New York City.

NEW JERSEY RED COPPER,

For yachts. Brightest color made.

NEW JERSEY SEAM PAINT,

A perfect substitute for pitch

NEW JERSEY PAINT WORKS

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

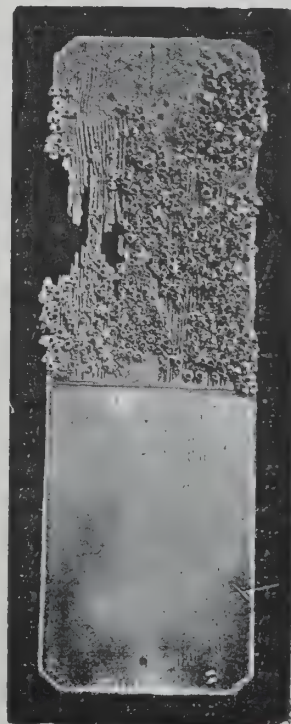
U. S. A.

REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

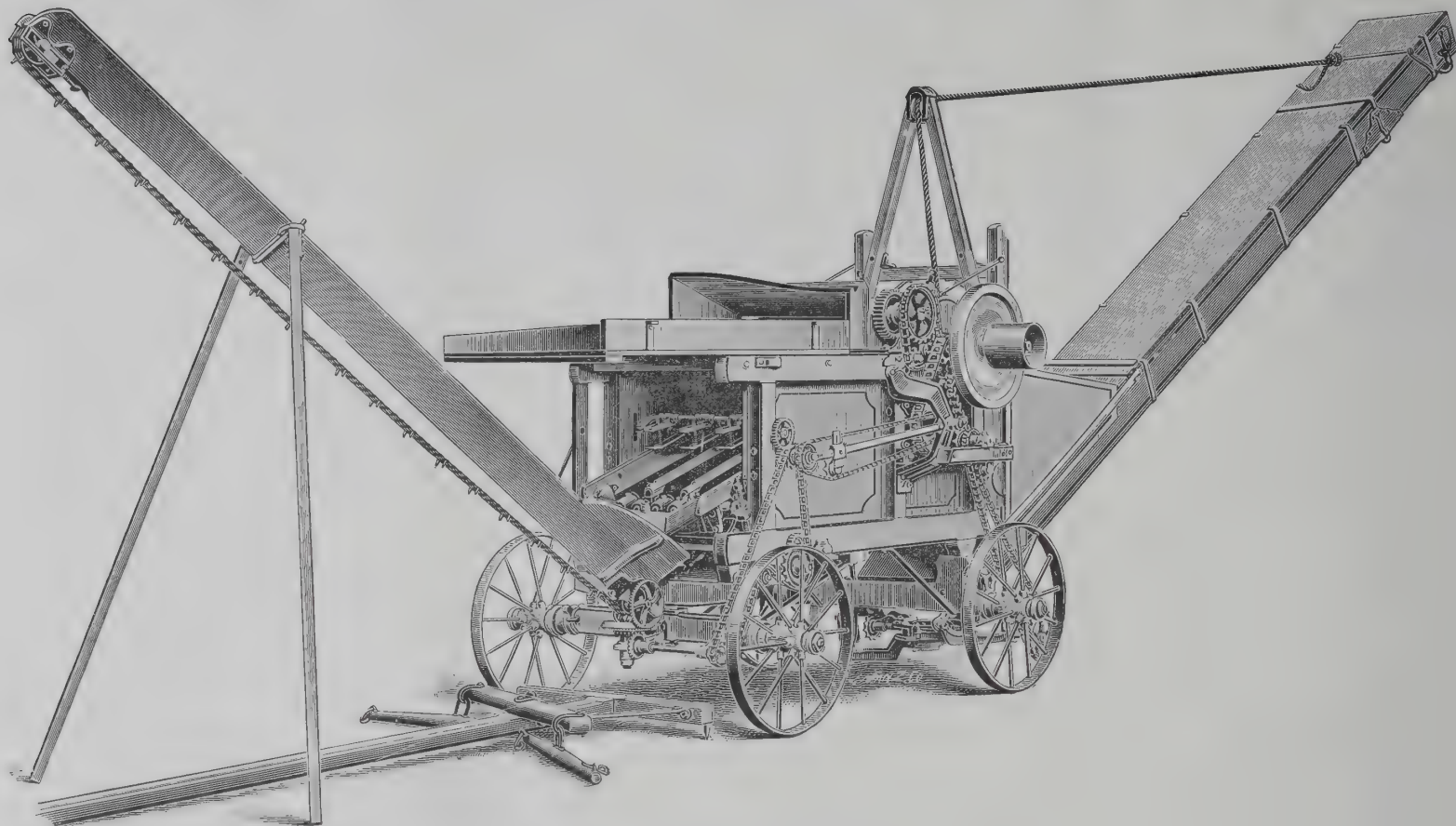
The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shya."



"Keystone" Corn Husker and Fodder Shredder

HUSKS THE EARS AND SHREDS THE STALKS INTO THE BEST FODDER KNOWN.



Used in the United States, Mexico, Central America, Chile, Uruguay, Argentine. It is strong and durable, and does excellent work. Shredded fodder is best. Send for full description and Export Price List.

Made by

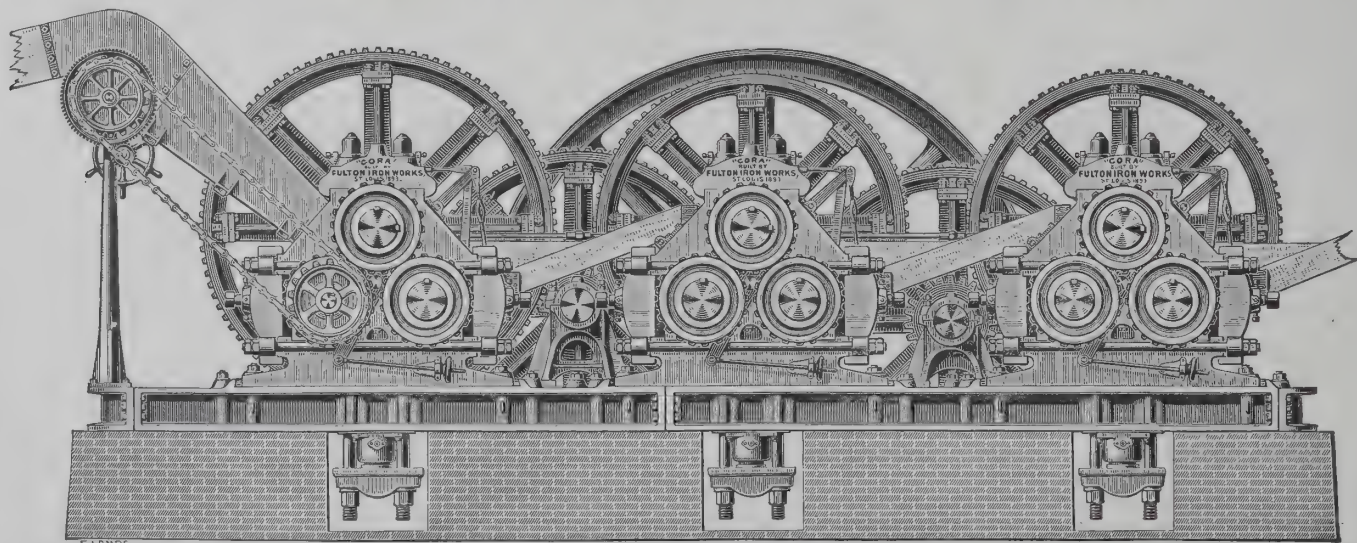
KEYSTONE MANUFACTURING CO.,
STERLING, ILLINOIS, U. S. A.

Address Export Office,

KEYSTONE MANUFACTURING CO.,
B 19-21 Produce Exchange, New York, U. S. A

"CORA" Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by **"FULTON IRON WORKS,"** St. Louis, Mo., U. S. A.

Per S.S. "COPTIC."

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

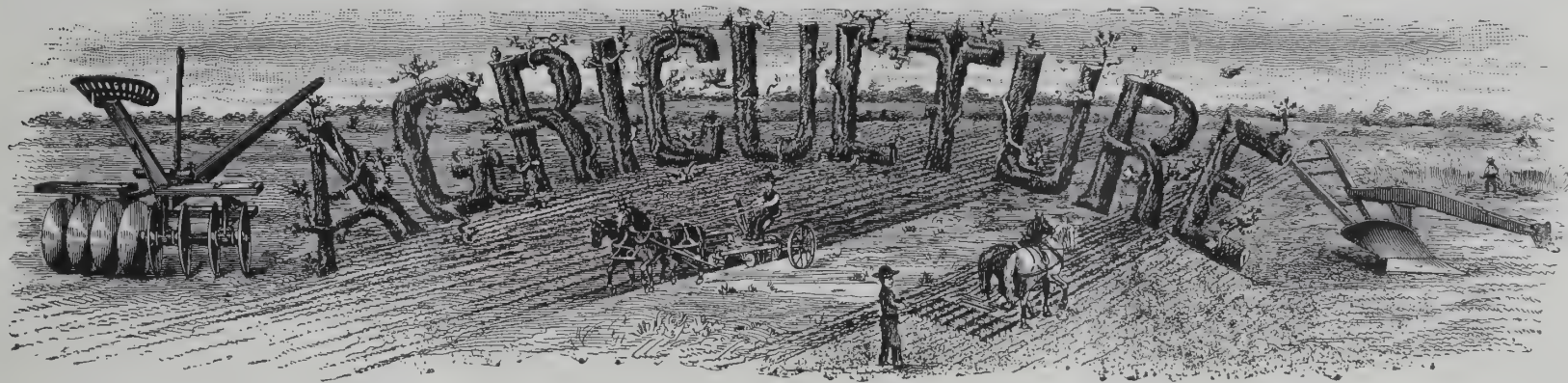
Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104 $\frac{3}{4}$; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

American Apples Abroad.

ACCORDING to advices received from London by Otto G. Meyer & Co., of Bridge and Whitehall streets, the apple crop abroad will be unusually small this year. Consequently choice, sound American apples, especially of bright color, will be in more than ordinarily active demand in the London, Liverpool and Glasgow markets.

Josiah Rich, manager of Meyer & Co., says, however, that apples will be cheap this year, in spite of the expected heavy exportations. Last year the aggregate crop of the United States and Canada was estimated to be between 57,000,000 and 60,000,000 barrels, nearly 10,000,000 barrels more than were ever produced any previous year, and this year's crop is expected to exceed even those figures.

J. C. Monaghan, United States Consul at Chemnitz, in a report to the State Department, writes:

"There is now no doubt that New England apples are welcome in the markets of Germany. Here they have no apples to compare with our Rhode Island Greenings, the Baldwin, Russet and Northern Spy. The Germans are very fond of apples, which they eat raw and cooked. Their physicians recommend them as a most healthful article of diet. But their best apples are by no means as good as the worst we produce. There is no reason why each year should not see us sending millions of dollars' worth where we only send thousands. Good winter apples especially Baldwins, Greenings, Russets and the Northern Spy, if carefully selected and packed, are sure to sell. There may be many other sorts whose qualities I do not know; I mention these because I believe them to be best suited to bear transportation, and because they improve for a long time before decay begins. The Baldwins and Greenings grow mellow after storage for two or three months in a dry cellar. A little experimenting, with careful noting of results, will certainly reward the merchants for their trouble. Boston, Baltimore, New York, Philadelphia—in fact, all our Atlantic cities whence fast freight steamers cross to England and the Continent—should do a good business in this branch. I have seen Baldwins, sent here via Hamburg, snapped up very quickly. The price at which I was offered a barrel of about two and a half bushels (size of a flour barrel) was 30 marks (\$7.14). I bought half a barrel, and when I went back two days later the whole consignment had been sold.

Our farmers in the coast country, from Maine to Florida, might make huge profits out of their orchards. I am not sure that Eastern peaches and Florida oranges could not compete successfully with the wretched apologies for peaches and oranges offered at enormous prices in these markets. Of course, much must depend on the cost of ocean transportation. If this could be got down to 75 cents or \$1 per barrel there would be profits for producers, middlemen and retailers. As soon as these people know that they will get good things at reasonable rates they prefer them to bad wares, however cheap. The qualities of our fruits are well known. All that is required is a little enterprise to put them in the shops and a little energy with which to push them."

Electrical Farming.

A WESTERN inventor says he has greatly improved on the German system of using electricity for plowing and other agricultural purposes, and has devised a method which is so simple that any one can work it if he has the current to do it with. This device enables the farmer to plow his field, harrow it, put in the seed, and, when the crop has grown, to harvest it by electricity. In a plant which has been constructed to show the capabilities of the system, the power is brought to the farm from a power house that serves an entire community within a radius of 10 miles from the farm. The current is conducted through a feed wire to a wire running around the fields, and besides being available in all weathers for all the outdoor agricultural operations of the farm, it is largely used within the buildings, and is found to be a godsend in districts where labor is scarce.

THE Standard Oil Company has purchased nearly one-half of the shares of the syndicate of the Nobel Brothers, the great Russian oil merchants, thus enabling the formation of a union of the American and Russian producers of petroleum. The German-American petroleum syndicate has acquired by purchase the business of the Ruth Company and the Baku Standard Company, at Dusseldorf.

Irrigation on the Western Plains.

"OWING to the fact that throughout the plains region there are no large streams, the waters of which are to any extent available for irrigation purposes, and that this country was settled by a people who believed that cultivation of the soil would increase the rainfall, who also were strongly prejudiced against irrigation, it has been only after repeated crop failures and bitter disappointments that the people have been convinced that new methods of farming must be adopted, and that in truth it is 'irrigate or emigrate,'" says *Nebraska Farmer*. "Only under the most favorable conditions and in few localities can more than a limited tract be irrigated from a single ditch or pumping plant, consequently individual effort instead of corporate wealth, must develop the country.

"In all the valleys a strong underflow exists, and thousands of pumping plants are being established, each one irrigating from 10 to 40 acres. Even on the higher lands farmers have in successful operation pumping plants irrigating from 5 to 10 acres, where the water lift exceeds 150 feet. The writer sits in his home, way out on the bleak prairie in Western Kansas, 150 feet above the water bearing sands, yet surrounded with tree, bush and vine in full Summer foliage, giving great promise of the coming harvest. A windmill swiftly turning in the breeze brings from the depths below the life-giving waters which, stored in the reservoir, afford an ample supply of water to irrigate several acres of ground.

"From the clear waters of the reservoir are obtained an abundance of fish to supply the wants of the family and in the Winter is obtained ice for Summer; a cellar stored with vegetables, fruit and honey affords a reasonable amount of good things of life, and the surplus will bring in an amount exceeding the first cost of the plant. Still, indulging in the lottery of dry farming, with a small herd to harvest the rich grasses nature every year so bountifully provides, this plant becomes only an example of the plants that are being put in all over the plains and which are converting a discouraged people into owners of prosperous homes."

Milking by Machinery.

THERE are 10 milking machines in operation in the State of Iowa. The reader will wish the first thing to know whether they are considered successful. The answer depends upon who is asked the question. Some of them are operated with entire satisfaction and some are not, yet all are the same make of machine. The difference is in the persons who run them. A machine is a machine, and a cow is a living, sensitive animal, supplied with nerves. There is a great difference in milkers. Some men, or women, will get more and better milk from a cow than others can from the same cow. The stimulation of the nerves in the right way is necessary to the full flow of milk and the full fat elimination. Why, we leave for scientists to explain when they can.

Now, if the milking machine is run simply as a machine, it is found that it will not be satisfactory. The attendant must have common sense and must use it. This common sense will tell him that cows are not all alike, therefore they should not all be treated alike. One cow is quiet and cool and cares little what you do to her, provided you do not interfere with her comfort. Another is nervous and needs to be soothed and quieted and her confidence won. Another is a hard milker and the milk must first be carefully started to a good flow by hand, or the machine will be ineffectual. One will allow the milk to spurt out freely the very first thing, another will "hold on to it" unless manipulated by hand a little at first.

From this it is plain that the machine can be warranted much safer than the one who operates it, for the machine is the same all the time, but the man may be pleasant one day and cross the next, may be thoughtful one day and thoughtless or stupid the next. Milking is an art, the one who milks by machine and tries it in a mechanical way will fail. But if he is intelligent and teachable and conscientious, if he has a genuine interest in his work, if he is a student of animal nature and a gentleman by instinct, the cow milker in his hands proves a crowning success.—*The Agricultural Epitomist*.

—Since the recent suspension of the duty on corn by the Mexican Government more than 100,000 bushels of that grain have been imported into the country through the ports of Nueva Laredo and Piedras Negras. Nearly all of these shipments have been made to points in the State of San Luis Potosi and Tamaulipas where there is a shortage of the corn crop.

Turnip Culture.

THERE is no question as to the profitable and salutary effect of root crops for stock in Winter, and if this need were more generally supplied the farmer would have less "doctoring" to do, and could keep his stock in heartier condition and at a less expense for food.

For this crop rich, new land is best; old land, however, well broken and made rich, will bring good crops. But if practicable, sow on rich loam soil that is low and retentive of moisture. A hard, dry soil or a drought is very trying on this crop. Ground from which potatoes, sweet corn or other early crops have been harvested comes in in proper time, and can soon be made ready for sowing. If not rich enough, give it an additional supply of manure or fertilizer, then break and harrow till the soil is brought to a good condition. Then, if the seed is to be sown broadcast, the ground should be marked off with slight furrows a few feet apart, by which to sow, that the seed may be the more evenly distributed. When thus sown, about two pounds per acre is the usual quantity sown; but when drilled in, about half that amount per acre is used.

Sowing broadcast is the better method for the farmer in general, as no cultivation is required after sowing; but many, especially those who wish to grow for the market, prefer to drill and cultivate.

Early sowing is not good, as the turnips get their growth before it is time to put them up; consequently, they rot. From the middle to the last of July is the best time to sow turnips, or if the weather should be dry and unfavorable, sowing may be done as late as the middle of August, and still a fair crop may be made.

This crop requires much moisture, and the drought and the fly are its greatest enemies, but a moist soil or a fairly wet season will obviate the one and usually bring in a good crop in spite of the other.

The farmer who is not provided with commodious storage houses or cellars, and wishes to raise large crops for the use of his stock during Winter, will find pitting in the field his best method of storage. For this purpose select an elevated situation, and on this dig pits, in which pile the turnips; then cover with earth and straw sufficient to prevent freezing and over it all it would be well to put a shelter of planks or boards.

Slight frosts do not hurt turnips, and they will continue to grow until late in the Fall; but a freeze must be avoided, as this will ruin them, and the crop should be stored before this is likely to occur.—*Exchange*.

Appreciating Light Carriages at Last.

THE American Annual Meet in Hyde Park is said to have "come to stay." We are glad of it. There are points in it worthy of consideration. Lightness seems to be the chief of them, lightness in vehicles and in harness. Smartness of appearance comes next, or not at all. The vehicles are built of the toughest wood, and in this way are made, as we should consider, perilously slender, but without any real sacrifice of strength.

The horses are so sparsely attired as at most to be open to the charge of indelicacy. One of them may yet stand in the dock beside that unhappy enthusiast who is always getting himself arrested for wearing rational dress. Every ounce of weight they carry is for pure use.

The result is record time in trotting whatever that may be worth, and less showy benefits which are far superior to it. Our wheels have long been nearing the American pattern, particularly in the hansom cab. This would still bear a considerable reduction of weight in the body of the vehicle with the greatest advantage to all concerned—including the horse.—*The London News*.

Standing Lumber in the United States.

A VERY rough and probably very liberal estimate of the amounts of timber standing in the various regions of the United States ready for the axe would give the following figures:

	Feet, Board Measure.
Southern States.....	700,000,000,000
Northern States.....	500,000,000,000
Pacific Coast.....	1,000,000,000,000
Rocky Mountains.....	100,000,000,000
Total.....	2,300,000,000,000

The total annual cut, including all material requiring bolt or log size, is estimated at 40,000,000,000 feet, board measure. The lumber industries employ capital to the extent of over \$1,000,000,000. They employ nearly 1,000,000 men, pay out over \$400,000,000 in yearly wages and produce over \$3,000,000,000 of commercial material.

FOR the past month the mills at Stockton, Cal., have been running day and night on big orders from China and Central America. On July 14th an order for 2,000 tons of flour for delivery at San Francisco for reshipment on the first China steamer was received. The Central American trade is good, and seven big orders for shipment next month remain to be filled. The heavy wheat crop will also give the California millers an advantage this season. The situation there is very encouraging to the miller and the producer.

—American goods, particularly implements, machines and vehicles, are popular in South Africa. The demand for them has been active and increasing, and with the development of that country our trade therewith must assume large dimensions.

Something New in Irrigation.

A PRESS dispatch from Chamberlin, South Dakota, of date July 19, says that a new irrigation system, inaugurated by Casper Kerr, a Division County farmer, is attracting considerable attention in that section. The larger portion of Mr. Kerr's land lies adjacent to the James River and is of such a character that it can be easily irrigated. The system employed by him for raising water from the river is by means of a pump, which is erected over the river near the bank.

The pump is a very simple affair, consisting of a box about 22 feet long, nearly three feet square, and projects into the river to a depth of about three feet. In the bottom of the box is a wheel which has a capacity of 500 revolutions per minute. This drives the water up to another wheel half way up the box and the second wheel performs precisely the same function as the first by pushing the water out of the box into a long trough and thence into the main irrigating ditch. The capacity of the pump is 150,000 gallons per hour. By reducing its length the capacity of the pump can be increased to 200,000 gallons per hour. This makes it as great a water producer as some of the larger artesian wells in the State. The pump is very simple in construction and is driven by a 16-horse-power engine. Kerr and another farmer who has now become interested in the device are satisfied that they can irrigate over 1,000 acres of land with comparative ease and little cost.

Farming in the South.

IN no section of the country are the farmers making more rapid strides in the direction of better methods than in the South. Formerly the South raised cotton and bought their meat and a large part of their breadstuffs. They have come to realize that the one crop system is impoverishing their soil, besides making them dependent on other sections for many of the necessities of life.

The Commissioner of Agriculture of Louisiana says the raising of more corn and forage crops last season than usual in that State has shown gratifying results, and from every section comes news of the excellent condition of stock; that the good intention of farmers manifested last season to make the farm more self-sustaining leaves the impression that the producers of Louisiana are determined to continue in that direction. There has been a marked increase in the raising of hogs and hog products, and of all kinds of stock in that State.

What is true of Louisiana in this respect is true of every other Southern State. The Southern farmer has discovered that he can "live at home," and he evidently has determined to do so.

The Biggest Known Hog.

THERE is a hog on exhibition at Kaufman, Texas, U. S. A., which is, perhaps, the largest living hog in the known world. It is now four years old and was raised in Robertson County, Texas, by Mr. Briggs. When he sold the hog six months ago it weighed 1,430 pounds. He is 8 feet 3 inches long, 4 feet 1 inch high, measures 6 feet around the neck, 8 feet around the body and 23 inches around the forearm.

His feet are as large as those of a common ox, and the leg bone larger than that of the largest steer's. He is Poland China and Red Jersey. He eats corn like an ox, takes the whole ear in his mouth at once and eats the cob as well as the corn, eating from 40 to 50 ears of corn at a time. There seems to be no surplus flesh on him, and physicians who have examined the hog say he can easily be made to reach 2,200 pounds.

The present owner, T. Ratigan, paid \$250 for the hog, and has been offered \$1,500 for him. He has a fire policy on the animal for \$5,000. No other hog, it is said, ever reached such tremendous proportions.

OUR readers' attention is called to the advertisement of C. A. Rockwell & Co.'s Coffee Mill and Coffee Canister Combined. The canister holds two pounds of coffee, is air tight so that coffee may be deposited in it for keeping. On the bottom of the mill is a glass receptacle into which the ground coffee falls, thus showing when sufficient coffee has been ground.

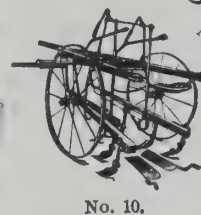
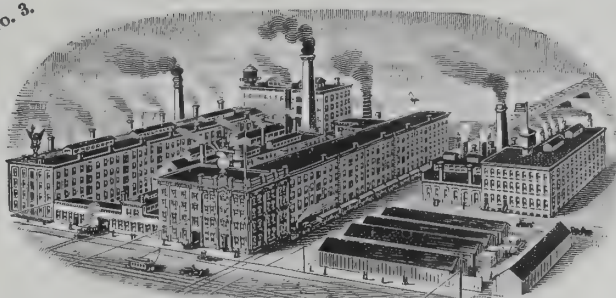
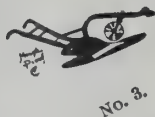
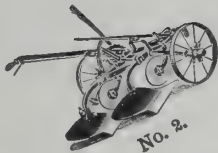
CALIFORNIA wines will cost more this year than in several years past, according to the California Winemakers' Corporation. It was stated that the vintage of 1895 was only 9,500,000 gallons of dry wines, red and white, while in the past few years the production has been between 15,000,000 and 24,000,000 gallons. Some 6,000,000 gallons are consumed on the Pacific Coast, and the exports have usually been from 10,000,000 to 13,000,000 gallons of all kinds of wine.

AMERICAN wine merchants will be interested in knowing that the Hawaiian Legislature has amended the sessions law of that country passed in 1878, relating to duties so that from January 1, 1897, for the term of five years, "no duties shall be levied, collected or paid on any wines imported into the Republic of Hawaii made from the juice of the grape, which wines are of less than 18 per cent. of alcoholic strength." The above-mentioned act was approved on the 10th ult.

—Robert Coleman, Secretary and Treasurer of the Matthews cotton mill, Tuscaloosa, Ala., recently shipped a car load of sheeting, consisting of 100 bales, to New York, from which point it will be shipped to China. This mill is doing a big business, turning out about 25,000 yards of cloth daily, and is better equipped than ever for filling large orders.

MOLINE, ILL.
U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
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MANUFACTURERS OF THE BEST GRADES OF

Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes, Beet Machines. Etc.No. 1 Dandy Combined Riding and Walking
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No. 2 Wheel Walking Gang Plow, 24 inches.No. 3. Steel Beam Plow with Rolling Coulter
S. B.
No. 4. Wood Beam Plow with Rolling Coulter.No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

F. O. B. NEW YORK.

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PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMES & CO., East London, Cape of Good Hope, Africa, for South Africa.

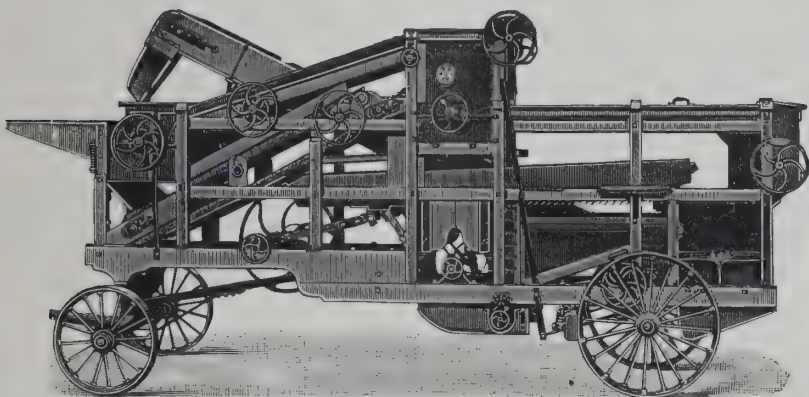
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STATIONARY, PORTABLE AND TRACTION ENGINES,
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OF ALL KINDS AND SIZES FOR LOCOMOTIVES



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COFFEE MACHINERY.**The Monitor Coffee Separator and Grader**

Will make clean separations and grade in one operation.

The Monitor Coffee Milling Machine,

The most perfect miller for coffee ever offered. It will do the finest work on tender as well as hard coffees, and do it without waste or breakage.

These Machines are in successful operation in many of the largest Coffee Houses in this country, and are well worthy of investigation by Handlers of Coffees.

Can be bought direct from manufacturers or through any reliable exporter.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

Is SUPERIOR to "CORN STARCH," "ARROWROOT," "SAGO," Etc.

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MAIZENA
(DURYEY.)Gold Medal Awarded
"MAIZENA."

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

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LONDON, 1862. "Supremely Excellent."

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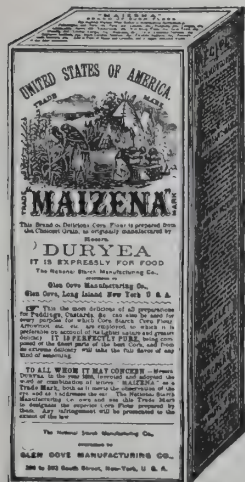
PARIS, 1878. "Best Produced of Its Class."

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Put up exclusively by THE NATIONAL STARCH MFG CO., successor to (Messrs. DURYEA) GLEN COVE MANUFACTURING CO., N. Y. U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and 1/2 lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

None GENUINE without "DURYEA" appearing on the face of Package.



English Bicycle Makers Must Hustle.

THE invasion of England by American cycle manufacturers is commencing now in real earnest, and if our manufacturers do not awaken to the seriousness of the situation at once they are willfully blind and woefully foolish. It is not for us to discuss the merits of the machines turned out by English and American manufacturers, nor is it our intention to institute comparisons, which for our present purpose are quite unnecessary. It is quite sufficient to point out that the public want a good and reliable bicycle, and they want it quickly. The Americans, so far as we can gather, come here prepared to supply what is unquestionably a good bicycle, and they state that they are prepared to deliver without delay. Nobody is in a better position than the editor of *Cycling* of knowing the keen disappointment experienced by many hundreds of cyclists during this present season, by reason of vexatious delays in the delivery of their machines; for letters find their way to our table in scores during each day, complaining of what is considered by the complainants a lack of attention to their orders. "Support home industries" is a good cry, but if English makers are content to supply an impatient public only to the extent of a limited output, without an attempt on their part to cope with the increased demand, the public have a perfect right to take advantage of the opportunity that is afforded them of securing on the spot, in return for their cash, a machine that is likely to turn out in every way equal to their requirements.

Several American machines are now on the English markets, and the representatives of the American houses with whom we have come in contact are not inaptly described in their own country as "hustlers." They are men of indomitable energy, and they come here prepared for any expenditure in the introduction of their machines to agents and the public generally. There are many agents throughout the kingdom who consider, rightly or wrongly, that they have not been treated fairly by the English makers; and the American may not find it an altogether difficult task to induce those agents to handle their goods, especially if prompt deliveries are guaranteed. This year has been a phenomenal one for the cycle trade, but 1897 bids fair to eclipse all previous records, and it only remains for the English manufacturers to look ahead and make the necessary preparations for coping with an unprecedented demand; that can only be done by arranging for an unprecedented output.

There is another matter which the English makers will do well to pay very careful attention to without delay. During the year some thousands of letters of inquiry pass through the writer's hands; these letters give a very good idea of what the public demand is likely to be, and there is no doubt in our mind that the general inclination is toward much lighter machines. The average inquirer, we find, is horrified at the idea of riding a roadster weighing 30 pounds, and it is a question that is frequently put to us, whether we consider the path racer a strong and sufficiently reliable machine for use on good roads. We have always deprecated the use of racing machines for a purpose for which they are not intended; but here are American machines built for road work, weighing 20½ pounds and a little over, and guaranteed to carry riders of 17 stone weight. Whether or not these machines will prove themselves capable of all that their makers claim for them is a question that time and experience alone can satisfactorily settle; we only know that the introduction of these light machines from America, machines which have stood the severe test of American roads, is causing cyclists on this side to wonder why they are still pedalling their 30-pound roadsters around the country, if a solid 10 pounds of weight can be taken off the cycle without apparently rendering it in any serious degree weaker. Let the English makers, therefore, study where the machines can be lightened without in any way bringing about a diminution in their strength; they will find it has got to be done, and it will be as well if they start the competition with the Americans upon equal terms, for we feel certain that the competition is going to be a keen one.—*English Cycling*.

Where Bicycles Come From.

IT is a source of wonder where all the bicycles come from. A careful examination of the catalogues show that there are more than 1,000 different makes of bicycles on the market. At some of these establishments as many as 100,000 wheels are made annually. Practically there are not patents on these machines, except on unimportant specialties, and so it is an easy matter to put a new wheel on the market. There is not so much difference in wheels as one is inclined to suppose. Few manufacturers make a whole machine in their own shops, but by far the larger number buy the parts from some maker and simply put them together, finish them, give them a name, and put them on the market. For this reason a fully equipped bicycle manufactory can be put in running order for \$5,000 or \$6,000. Hundreds of wheels of different makes are produced, every piece of which is turned out of the same factory that furnishes the different parts, and all that the manufactory requires is a good master mechanic and some ordinary finishers and workmen. The bicycle is not an expensive thing to build, and the difference between the cost of the amount and the price it is sold for is so large that the manufacture of wheels has been enormously stimulated. But were it not for costly salesrooms, extensive advertising and large commissions to agents the price of the wheel would be very materially reduced to the purchaser. It is estimated that the present Spring and Summer at least 1,000,000 wheels have been sold in this country alone, which has involved an outlay of \$50,000,000 by the wheelmen of the United States, and still the demand is unabated and bicycles are being marketed by the thousands every day.

—The Swartz Metal Refining Company, Chicago, have recently made some important exportations of metal to Hamburg and Halberstadt, Germany, having shipped 100,000 lbs. of copper and 50,000 lbs. of zinc.

They Like American Wheels.

THE excellence of the American bicycle is generally recognized not only in this country and among its friends, but in Europe, where it is making its appearance in increasing quantities. Prior to July, 1895, there was practically no exportation of American wheels. Since that date and up to April, 1896, the exportations of bicycles have amounted to more than \$1,000,000 worth. That this increase of exportations is due somewhat to the American tourist and his wheel—and her wheel—is without doubt. But if the wheel did not possess superior qualities over its foreign rivals it would not be in demand in foreign countries. If it was not graceful in its lines, light in weight, strong in its parts, easily managed and still more easily propelled, it could not have hoped to make a place for itself in the shops of foreign dealers. But it possessed all these qualities in a marked degree and as a natural result there has grown up a healthy foreign demand. The returns for May show that from New York alone wheels of the value of \$220,176 were exported. This is at the rate of more than \$2,600,000 a year. The shipments for May are classified thus by the New York *Commercial Bulletin*:

Austria.....	\$720
Belgium.....	7,010
Denmark.....	5,950
France.....	10,263
Germany.....	30,208
Italy.....	5,979
Netherlands.....	15,955
Portugal.....	250
Russia (Baltic).....	1,003
Sweden and Norway.....	5,903
England.....	109,965
Scotland.....	625
Bermuda.....	714
British Honduras.....	52
Newfoundland and Labrador.....	1,560
Costa Rica.....	196
Guatemala.....	375
Mexico.....	150
British West Indies.....	830
Dutch West Indies.....	138
Hayti.....	1,050
Cuba.....	1,535
Porto Rico.....	1,308
Brazil.....	977
Chili.....	20
Colombia.....	3,849
Ecuador.....	125
British Guiana.....	100
Uruguay.....	16
Venezuela.....	351
China.....	400
British East Indies.....	294
Japan.....	700
British Australasia.....	11,058
British Africa.....	500
Portuguese Africa.....	52
Total.....	\$220,176

As will be noticed, the French have begun to import in somewhat satisfactory quantities, although that country is peculiarly the home of the bicycle. England, usually first in manufactures of iron, is put down as the heaviest importer. And not only is she an importer of bicycles but she is also an importer of American made bicycle tubing. Recently an order for 1,000,000 feet of bicycle tubing was placed with an American manufacturer by a bicycle maker at Birmingham, England. Yet only last year the United States imported tubing to the value of \$507,041 from Birmingham.

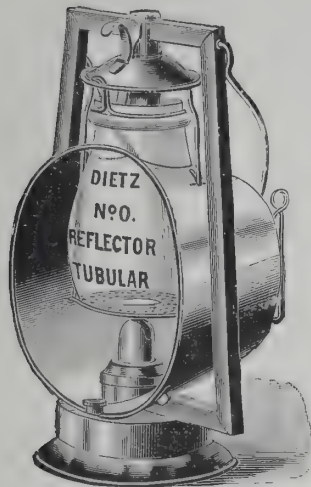
Another Electric Bicycle.

THE latest innovation in the manufacture of bicycles is an electric motor attachment which supplies motive power for the machine and current for the electric headlight. The wheel is of the ordinary pattern and weighs 27 pounds without the attachment, but otherwise fully equipped. The electrical equipment, which consists of a battery, motor and switch, brings the weight of the bicycle up to 60 pounds. The battery, which is a dry chloride cell, weighs 15 pounds. The attachment takes up but little room and is slipped easily into place under the saddle. When it is not needed the machine can be used in the ordinary way. If at any time the rider wishes to use the pedals instead of the electrical power he can cut off the current with a small switch, which is placed under the handle. The motor is connected with the hub of the rear wheel by a woven silk band.

THE BUFFALO CYCLE COMPANY, Buffalo, N. Y., have opened an Australian branch at 5 Hunter street, Sydney, making specialties of the "Envoy" roadster for gentlemen, the "Fleetwing" roadster for ladies and the "Halliday" racer. The machines are fitted with reversible handle bars of seven-eighths inch tubing, celluloid tipped, each bar giving two positions, either upraised or drop; also with Morgan & Wright's quick repair tires, tested ball bearings and either wooden or steel rims. Saddles, the choice of which is of great importance to the rider, can be had of about half a dozen different patterns. We understand the firm are contemplating opening branches in Melbourne and Western Australia.

—The cheapest machines are those which do the best work in the most rapid manner, with least cost of maintenance. First cost is one thing, last cost another.

Dietz Reflector Lantern.



There is an all "roundness" about the goodness of this Lantern that is noteworthy. In fact, it has too many virtues to crowd into this space. It gives a surprising volume of light, which is rendered especially intense by the concentrating powers of the Reflector and Ho d. It will not blow out, is absolutely safe and can be used for driving darkness while you are driving horses, having a simple arrangement to attach it to any vehicle. The U. S. Life Saving Service uses it for a Patrol Lantern—as the fierce coastwise gales cannot extinguish it.

The U. S. Government buys wisely—take a hint from it, and insist on your having the "Dietz" goods. The list price on above lantern is \$22 per dozen and the export discount 50 per cent.

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Restarts instantly after a temporary interruption of the steam or water supply.

It has a wide range of capacities, and raises the water promptly with hot or cold pipes.

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Bones, Tankage,
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and all similar materials,

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Large capacity.
No skilled attendants
No special foundation.

SIMPLE. STRONG. COMPACT.

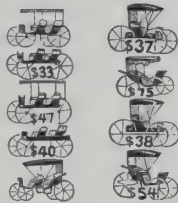
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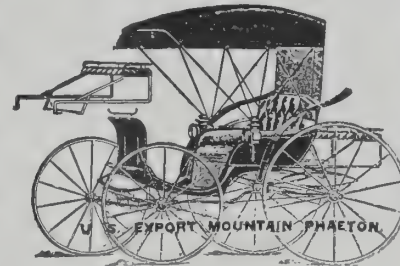
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WE EXPORT VEHICLES TO ALL PARTS OF THE WORLD

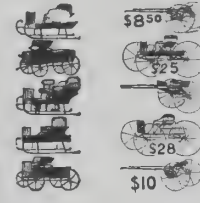


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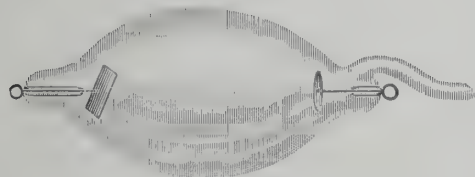
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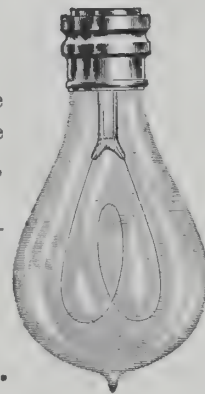


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We manufacture a full line of standard and miniature incandescent lamps, 1/2 to 300 c. p., for all systems. We can guarantee them to be of the highest possible grade, and to give undoubted satisfaction in service.

Special attention to export trade, and special discounts on large orders.



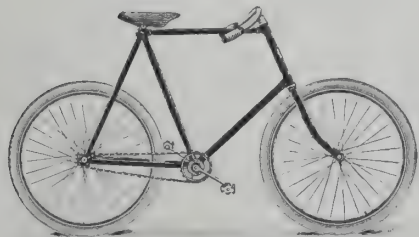
BEACON LAMP COMPANY,

BOSTON, MASS., U. S. A.

After October 1st, NEW BRUNSWICK, N. J., U. S. A.

THE BLACK MFG. CO., - ERIE, PA., U. S. A.

We build bicycles of the finest quality only and have nothing to offer either in cheap or medium grade wheels. Our discount for export is 30 per cent., and we deliver machines properly boxed f. o. b. New York. Order through your commission house and send copy of order direct to us.



TRIBUNE MODEL 27.

Price \$100. Weight 23 1/2 lbs.

This is our standard men's wheel and is suitable for all kinds of road use. It is built in three heights of frames, 22 1/2, 24 or 26 1/2. The wheels are 28 inches diameter; 26 inches will be furnished if preferred. Gear, 68; options, 60, 63, 72, 76 or 80; cranks, 6 1/2 inches, 7 inches if preferred. If not otherwise specified, all machines will be fitted with Hartford or Morgan & Wright tires. All wheels are supplied with tool bag, tools and repair kit. Regular finish, black enamel, nickel trimmings. If a lighter wheel than the above is desired, order should specify Model 21, which will weigh with light road equipment about 20 1/2 lbs.

Tribune Bicycles.



TRIBUNE MODEL 24. Price \$100.

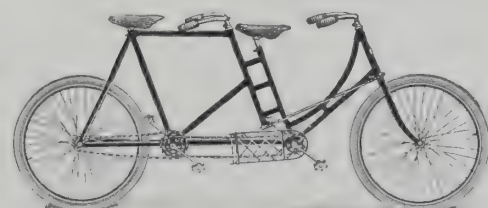
Our ladies' wheels are built in three heights of frames, 20 1/2, 22 1/2 or 24 inches. 20 1/2 inches is standard and will be shipped if not otherwise specified. Wheels, 28 inches, can be furnished, with 26 if preferred. Regular gear, 63; options, 56, 60, 68 or 72; cranks, 6 inches throw. The weight is about 24 lbs.

The Celebrated
Cycloidal
Sprocket.



Used on

Tribune
Bicycles only.



TRIBUNE MODEL 23.

Price \$150. Weight 44 lbs.

Our tandems are also built with double diamond frame for use of men riders. Wheels are 28 inches; height of frame, 24 inches; ladies' forward frame, 20 1/2 inches. Gear, 68; can fit with 72, 76 or 80, if desired.

American Bicycles in France.

REFERRING to the invasion of Europe by American makers of bicycles, the well-known critic, "R. F. C.," writes from Paris as follows: "The French manufacturers are doing all they can to monopolize the trade in this country. When the present heavy import duties on cycles and cycle parts were imposed at the beginning of 1891 they thought that the foreign makers would be entirely shut off the market, or at any rate that they would not be able to compete with the native wheels on the score of price. As a matter of fact the foreign cycle firms do not pretend to do so. They send over their best wheels, which they sell at a good price, and there are enough buyers willing to pay for them to make the business a paying one. The experienced cyclist insists upon having the best wheel it is possible to get, and he does not hesitate to purchase an imported bicycle because it is higher priced than the home article. Moreover, the native production is much below the present growing needs, so that there must continue to be a very large demand for foreign wheels so long as the competition is carried on in a fair way.

"The English have made little attempt to work up this market during the present year, as they urge that they have quite enough to do to supply the requirements of their own country, to which they are giving a preference, and there is only one English firm which is sending wheels here upon a large scale. The Americans, however, have awakened to importance of building up a connection on this side. All the leading makers are now represented here, and I have no doubt that it is this threatened competition which has frightened the French makers into asking for further protection to their industry. However this may be, it is just reported that the Commission of Customs is now considering a proposal for increasing the duties on foreign wheels to about double what they are at present, thus burdening a foreign bicycle with an impost of something like \$20."

Superiority of American Silverware.

"NEW YORKERS don't half appreciate their own markets," said a man who has just returned from London to a New York *Sun* reporter, "and they frequently amuse English people by buying abroad articles that could be purchased to much greater advantage here. For instance, silverware. My observation of silver abroad leads me to believe that we have the most artistic workmen in that metal right here in New York. I picked up some handsome pieces of old silver in France, but I could find nothing modern that compared in design or finish to the articles exhibited by our best dealers. Several years ago a wealthy Englishman came to me in New York with letters of introduction. It was his first trip to this country, and he told me he wanted to buy some gifts for his friends at home and he wanted to purchase something that should be a good example of American workmanship. He surprised me not a little by saying that he had heard our silverware spoken of very highly. I had never given the subject a thought, but I took him on a tour of inspection and he made a number of purchases. He was an expert on silver goods and he told me that this city offered a bigger choice than either Paris or London. Moreover, this reputation of New York is not new. I saw a few days ago some work that was turned out nearly half a century ago in this city by a silversmith named Adams. I don't know anything about Mr. Adams or what has become of him, but his work in design and finish was of the very highest order. I have recently been examining the work of silversmiths abroad and I have found it inferior to our own."

Crude Petroleum Product.

THE total production of crude petroleum in the United States in 1895 was 52,983,526 barrels, valued at \$58,671,279, against 49,344,516 barrels in the previous year, valued \$35,522,095. These statistics are compiled for the Geological Survey by expert Joseph D. Weeks. All important-producing districts shared in the increase except West Virginia and New York, which showed slight decreases.

Since the beginning of operations in Titusville, Pa., in 1859, the enormous total of 709,713,403 barrels of crude petroleum have been produced in the country, of which 516,657,260 barrels represent the product of the Pennsylvania and New York oil fields. The stock in the Appalachian oil fields at the close of last year were 5,344,784 barrels, a decrease from 6,499,880, the stock on hand at the close of the preceding year. The features of the year were the stock decrease, the increase of production in Ohio, Indiana and California, rise in prices and extension southward of the profitable producing districts of the Appalachian range.

THE electrical industry has often been characterized as one of mushroom growth, and if this term be confined to the rapidity of its progress no one can find any objection to it. Yet, in spite of the rapidity of its rise, we know of none which stands on a more solid basis of actual work and achievement. Indeed, if the stability of an industry is to be gauged by the manufactories which it has called into existence, then certainly the electrical arts stand well abreast of any on which writers on modern industry are so wont to dwell.

—It is said that Germany is about to adopt the American idea of triple screws for war vessels. The recent visit of the United States cruiser "Columbia" to Kiel, on the occasion of the canal festivities, brought the matter more closely to the attention of the German naval authorities, with the result that two new battle ships and five cruisers are to be equipped with triple propellers.

Investigating Foreign Markets.

AN effort on the part of the National Association of Manufacturers to bring about more intimate trade relations between the United States and Denmark has produced gratifying results. Several weeks ago B. W. Campbell, of Cincinnati, went to Denmark as a special commissioner of the National Association of Manufacturers for the purpose of investigating the opportunities for the extension of American trade in that country. Mr. Campbell was accompanied by Charles G. Curry, of Louisville, Ky., representing the Louisville Board of Trade, and T. Soegaard of the Department of Foreign Affairs of Denmark, and the party reached Copenhagen two weeks ago. A letter from Mr. Campbell, which has just been received by President Theodore C. Search, of the National Association of Manufacturers, is of much interest, as it tells of the very enthusiastic reception which was extended to the delegates from the United States by public officials and by business men, and notes the following: "Every facility that could aid us in accomplishing our mission has been placed at our disposal. For the display of the samples of American goods which we brought with us one of the finest buildings in the city has been given to us free of charge. The United Steamship Company have placed at our disposal a steam vessel and a man to take us where we want to go, in order that we may see what Denmark can buy from the United States and what we could buy from Denmark. The Board of Trade of Copenhagen have placed at my command a man to furnish all the information that may be needed to enable me to make a thorough report on the business conditions and trade opportunities here."

Expand the Market and Increase Production.

A REPORT recently adopted by the New York Chamber of Commerce says: "The events of the past year furnish some object lessons to American producers, manufacturers and merchants, which are worthy of more than passing consideration. The war in the East has probably inaugurated a new epoch for hundreds of millions of people. The partition and opening up of Africa is scarcely less important in its ultimate results to commerce. Thus far our increase in population and wealth in this country has measurably kept consumption on a parity with production, but evidences are not lacking that this state of things cannot continue. If we would keep step to the music of the times and keep our labor and capital remuneratively employed, we must bear in mind the wants of the other 1,370,000,000 of people who constitute the population of the world—both natural and creative, or educational wants—Therefore be it

Resolved, That, in the opinion of this Chamber, the present year marks an epoch in commercial history, that the present is a time worthy of the best efforts of our producers, manufacturers and merchants, to extend the export trade of the United States, and that these efforts should be supported by wise and progressive policy on the part of our Government.

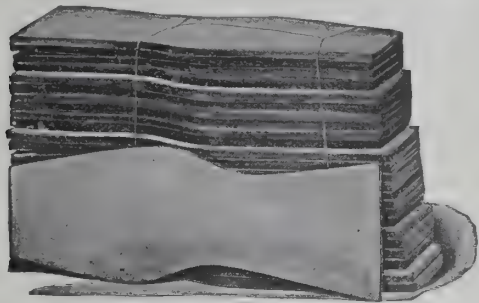
South African Trade.

IN its issue of April 3, 1896, the *British and South African Export Gazette* publishes an article on American trade with South Africa, from which we quote the following: "The rapid growth of American trade in the markets with which this journal deals is certainly very instructive. The produce and manufactures of the United States shipped to South Africa throughout the year of 1895 amounted to \$6,400,000, as compared with \$4,200,000 during 1894. This gives an increase of 51.1 per cent. Comparison of the figures on 30 principal articles of British merchandise and manufacture shows that the increase in American exports to South Africa has been more than double the increase in British exports, while the increase in United States shipments was at the rate of 51 per cent, that of Great Britain was only at the rate 24.8 per cent. We particularly desire to call the attention of British engineers to the enormous increase in American machinery sent to South Africa. The figures for agricultural implements form a striking contrast to the results of the British trade during the same period, while general steam engines and machinery increased from \$450,000 in 1894 to \$1,200,000 in 1895. Other lines of American goods which have shown large increases are breadstuffs, wheat, flour, American lumber, manufactures thereof, unmanufactured wood for mining and building purposes, builders' hardware, mechanics' tools, carriages, cars, leather manufactures, wearing apparel, canned beef, vegetable oils and mineral oils."

THE HAZELTON BOILER COMPANY, New York, reports that nearly all of its orders now being received are for the very earliest possible delivery, and that many of its recent sales have been made to old customers, who are now enlarging their plants. The orders mentioned are gratifying to the company and are an indication also of an improved feeling among certain manufacturing lines.

AN interesting demonstration of the excellent quality of tinplates made from American Bessemer steel sheets and their adaptability for stamping purposes was made recently at a New York factory, when, out of 1,202 blanks, no less than 1,181 were drawn down into perfect 4 quart deep pans, a smaller percentage of waste than has been usual with imported Siemens plates. The material used was the Alba bright plate made by the Pittsburgh Tinplate Works, New Kensington, Pa.

—The Bethlehem Iron Company, of Bethlehem, Pa., U. S. A., last month shipped the ballistic plate for side armor of the Russian battle ship Rostislan to Admiral Virchowsky commander of the port at St. Petersburg. The plate weighed 21 tons.



American shoemakers and shoe-menders have got ahead of you. They don't buy whole sides of sole-leather now.

A shoemaker wants 2 or 3 grades and 4 or 5 thicknesses.

We cut sides, make 8 grades and 15 thicknesses, sell the cobbler the grades he wants, and the rest, including the waste, to somebody else, who wants that.

All well served; no waste; no using leather because you've got it.

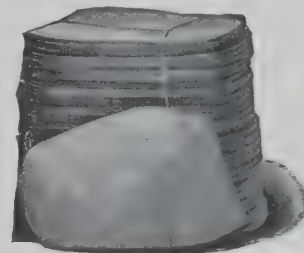
We do this business better than anybody else—it is a close wholesale business.

Do you want to know about it?

BAXTER SCHENKELBERGER & CO.,

350 Congress street, Boston, U. S. A.

50 Tabernacle street, London.



THE DENSMORE, "The World's Greatest Typewriter."

WRITES 84 CHARACTERS.

LIGHTEST KEY STROKE, HANDIEST, QUICKEST, STRONGEST.

Represented in more than 200 Cities in the United States and in

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ST. PETERSBURG, Puschkinskaja 7.
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FROM THE U. S. GOVERNMENT.

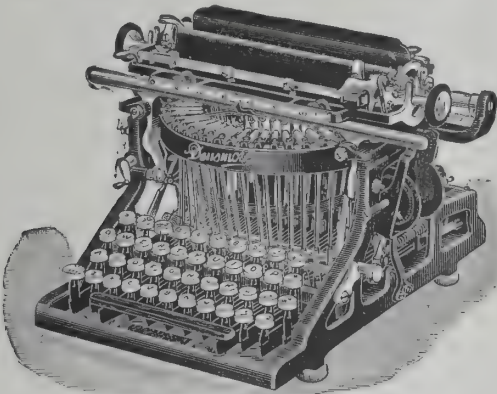
DENSMORE TYPEWRITER CO.

Gentlemen—We have now in use in the Bureaus of this Department nearly eighty Densmore machines. We have no complaint from the users of them, hence we conclude they are giving entire satisfaction. Respectfully,

(Signed) HIRAM BUCKINGHAM, Custodian.

FREE: Illustrated pamphlet with testimonials from leading concerns.
Active, responsible **DEALERS DESIRED** in all open foreign cities.

DENSMORE TYPEWRITER CO., 316 BROADWAY, NEW YORK, U. S. A.

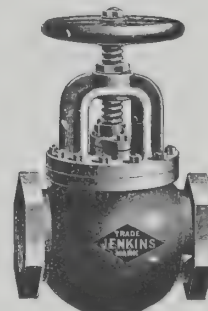


JENKINS BROS.' VALVES,

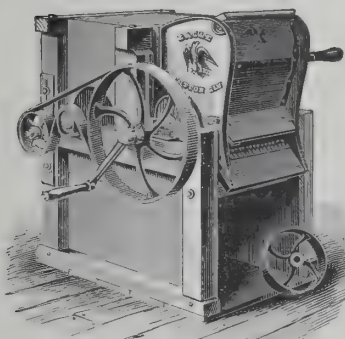
Globe, Angle, Cross, Check, Safety, Blow-Off, Etc.,

Are manufactured of best steam metal, and are suitable for any pressures of Steam, Oils or Gases. Contain Keyed Stuffing-Box and Disc Removing Lock-Nut, making them the easiest and cheapest to keep in repair. The Jenkins Discs used in these Valves are manufactured to stand High Pressure Steam. Warranted as represented. None genuine without Trade Mark. Send for Catalogue.

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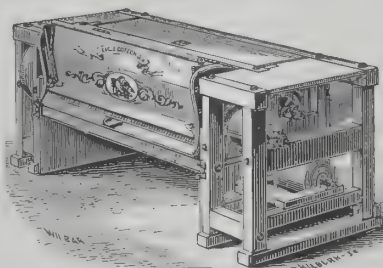
EAGLE COTTON GINS.



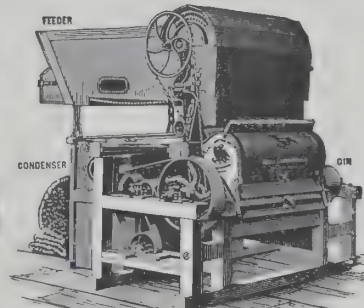
These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details, illustrated Catalogues will be furnished on application.

Eagle Cotton Gin Co. { FORMERLY Bates, Hyde & Co. } Bridgewater, Mass.



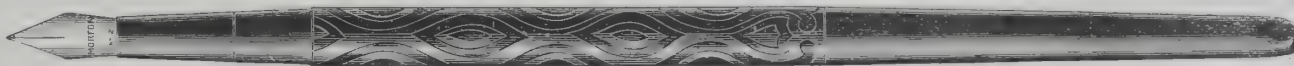
Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

OUR FOUNTAIN PENS

On receipt of \$10 we will send a sample line at export prices.



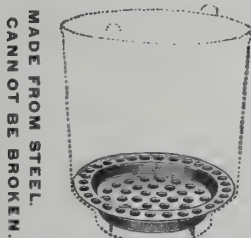
have holders made of best quality vulcanized rubber, are elegantly finished and are fitted with best make of Gold Pens.

Foreign buyers will do well in corresponding with us, as our prices will be found satisfactory

Our goods can be ordered through any commission house.

Catalogue "D" sent on request.

PREMIER PEN CO., 534 Walnut St., Philadelphia, Pa., U. S. A.



SAFETY KETTLE BOTTOM.

Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

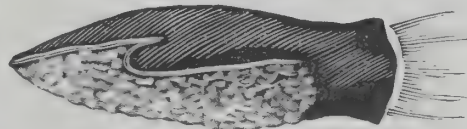
Stove Polishing Mitten,

FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands. \$18.00 per gross F. O. B. at New York.

For Particulars address

DIAMOND HARDWARE CO., 620 Atlantic Ave., Boston, Mass., U. S. A.

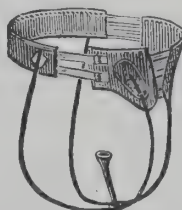


THE HASTINGS & McINTOSH TRUSS CO.,

Established 1872.

Successors to
THE HASTINGS TRUSS CO.

224 SOUTH NINTH STREET,
PHILADELPHIA, PA.,
U. S. A.



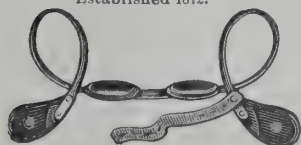
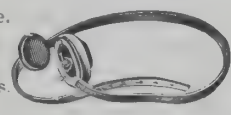
Manufacturers of all kinds of Indestructible
Hard Rubber, Elastic and Leather-Covered TRUSSES,

Abdominal and Uterine Supporters, Shoulder Braces, Crutches,
Elastic Hosiery and Body Belts.

For Home and Export Trade.

Sole Makers of the CELEBRATED DR. McINTOSH NATURAL
UTERINE SUPPORTERS.

We solicit orders through export commission houses.
Send for Catalogue and Price Lists.



The Next Advance Move.

AMERICAN enterprise is arousing itself to the possibility of capturing its share of the ocean-carrying trade. Capitalists with millions at their command are considering the possibilities of establishing ship lines under American registry. This has been made possible by the decline of iron and steel within the past few years to such low prices. Another factor in this interesting problem is found in the enormous expansion of our productive capacity, in the lowering of prices and values, and in the growing acquaintance of our people with the particular and special requirements of other countries. We accomplished one wonderful thing in the transfer of the tin-plate industry from Wales to the United States. We can, if we will, soon have our own ships to carry our manufactured products to foreign lands. One lever for this result will be found in reciprocity treaties. All conditions are favorable to American ship-building. We have the yards, the skill, the machinery and equipment, the enterprise, capital and labor. What else is wanted? Our battleships are the envy of European nations; our merchantmen speed with the fleetest of foreign shipyards. An inviting South American trade calls for our taking of it. A delegation of our most progressive citizens will soon go to our sister republics beyond the equator to shake hands and say, "We are coming!" The two Americas, North and South, are moved with one common impulse—to come together commercially. It is for us to take the initiative, and it is with ships that we can and will do it—*From the Carriage Monthly.*

Mica Mines.

AN interesting geological fact is that the wild and apparently worthless mountain region around Bakersville, Western North Carolina is the main source of mica supply for the United States. Mica mining is one of the greatest industries in North Carolina and has yielded fortunes to those engaged in it. Mica is found in all sorts of blocks of various thicknesses and shapes and can be split and resplit almost ad infinitum, or until it becomes the thin, transparent, flexible wafer of commerce. The material is by nature imbedded in or scattered through the feldspar in masses large or small, close together or far apart, and is blasted from the rocks by means of dynamite, the purer veins being found between walls of slate. From the mines it is taken to the shops where it is split into thin sheets, trimmed into regular forms and made ready for the market, the price varying with the size and color of the sheets. The average size is about 4x6, though rare sheets of 24x18 inches are sometimes found.

How Americans Make Chairs.

A CORRESPONDENT of a Milwaukee paper, commenting on the fact that 7,000 chairs are turned out by the big factories at Sheboygan, Wis., every day, says: To produce 7,000 chairs a day every man or woman in the factories must make about three chairs a day, and when it is remembered that a man could not make one of the more elaborate chairs by hand in a week, and a woman could not in a 100 years, it is clear that a great amount of machinery and a perfect system must be used to accomplish the result. Fortunes have been spent perfecting chair-making machinery, and anybody who will take the trouble to go through a factory will be astonished at what has been accomplished. Each factory is virtually a great machine into which rough hard wood planks are run at one end and perfect chairs in thousands of varieties are turned out at the other.

To Beat All Creation.

THE Chicago scheme for the erection of a tall steel tower has not been abandoned, although it has dropped out of sight for some time. Announcement is now made that the City Tower Company have purchased a site on the west side of the city, consisting of a block 350 by 600 feet. The Metropolitan Elevated Railroad runs so close to it that a station can be built at the entrance to the park. The tower is to be built on the plan designed by D. R. Proctor, who is also the promoter of the company. It is to reach 1,150 feet from the ground, this being nearly 200 feet higher than the Eiffel tower. The equipment contemplated will comprise 35 elevators and the tower will have seven landings, the lowest to be 225 feet from the ground.

THE Brazilian State Government of Minas-Geraes voted, in the beginning of 1894, the foundation of a new city to replace Ouro-Preto, the ancient capital. The decree provides that this city, which shall be called Minas, shall be finished in four years. The new city will be built in squares, on the American system, and will comprise all the most modern sanitary and other improvements. Several foreign firms have already obtained concessions for work in connection herewith. In a short time tenders will be invited for lighting the town, and the laying down of electric tramways. Several hundred houses have still to be built.

WILLIAM HALSEY, who represents an important shoe business in Melbourne, Australia, is now in the United States making arrangements to handle several lines of American shoes in Australia, in connection with those on which he is already doing business. He says there is a good demand for the American shoes over there and that the magnet which drew him to this country was the desire to increase his business in this direction; that he is making a success in the introduction of American footwear into Australia and that he believes there is an opportunity for a large growth in this business.

Our Consular Service.

"THE consular service is the practical and business side of our foreign intercourse," writes ex-President Harrison in July *Ladies' Home Journal*. "There are more than 1,200 persons in the consular service of the United States. These are located in the important commercial cities and towns of the world, and are described generally as Consuls General, Consuls, commercial agents, interpreters, marshals and clerks. The duties of a Consul are various and multifarious. He is the protector and guardian of American commerce; provides for destitute American sailors and sends them home; he takes charge of the effects of American citizens dying in his jurisdiction, having no legal representative; he receives the declarations or protests of our citizens in any matter affecting their rights; he keeps a record of the arrival and departure of American ships and of their cargoes, and looks after vessels wrecked; he reports any new inventions or improvements in manufacturing processes that he may observe, and all useful information relating to manufactures, population, scientific discoveries, or progress in the useful arts, and all events of facts that may affect the trade of the United States, and authenticates invoices and statements of the market value of merchandise to be shipped to the United States. Every consulate is a commercial outpost, and if the service could be given permanence of tenure and a corps of men of competent equipment it would become a powerful agency in extending our commerce."

New York's Fire Department.

EVERY city in the United States shows local pride in its firemen. Each claims that its department is one of the best (if not the best) in the country. The rivalry between some of the cities is at times quite amusing, and there is much discussion upon the merits of their own firemen; but New York City undoubtedly occupies to-day the enviable position of having, all things considered, the most thoroughly equipped and most efficient fire service in the world. The apparatus is of the best; the horses, selected with care and judgment, are magnificent animals, and the men, picked from those thought to be best adapted to the work they must perform, are subjected to a most rigid physical examination before they are admitted to the service, and afterward are trained in a school of instruction at Fire Headquarters that is complete in itself.

Novel Method of Drilling.

A NOVEL method of perforating iron plates is in use at the big Cottonwood Power Company's plant at Salt Lake City, Utah. It was required to cut four 48 inch openings in a seven foot penstock for pipe connections, and the plates were one-half inch thick. They commenced cutting through with chisels, but being found too tedious, they procured some steel bullets cased with copper and shot a line of holes through with a rifle from a distance of about 80 feet, and cut out the intervening edges, doing the whole job in a very short time.

THERE are folding chairs for dentists' use which can be taken down and packed in a box made for the purpose. When set up they are of the same general proportions as the regular chair, capable of adjustment and comfortable. Such chairs are made for the use of dentists who divide their time among different points, more especially in regions where the transportation facilities are limited, as in parts of South America, and for more convenient handling in shipment to points of difficult access.

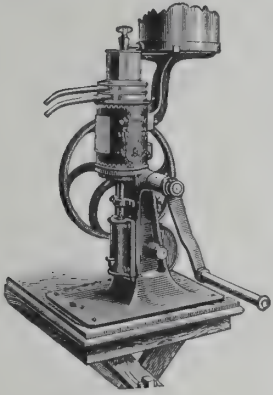
A NORWEGIAN merchant writing to an American newspaper in reference to American wheels in Norway says: "The principal reason why the American cycles have gained so quickly in favor is on account of their extreme lightness and superior finish. The public were at first a little afraid that the wood rims, which are now almost exclusively used on the American machines, would not be as strong and serviceable as the steel tires; but we still have the first complaint to hear, although we have sold several hundred machines this year."

AS SHOWING the diversity of uses to which the electric motor is now being put, there were received in the power department of a large electric company during the first two weeks of last month orders for motors to operate printing presses, saws and planers in a box factory, mining machinery in a coal mine, machinery in a large bakery, blowers in a stove works, a fire pump, a mine pump, large arc lighting dynamos, a jib crane, travelling cranes, machinery in an oilcloth works and an inclined railway, besides several other applications.

C. A. PRATT, Clinton, Mass., has invented a new tire for carriages, which he calls the Pratt patent cellular pneumatic carriage tire, which is said to be puncture proof. The interior of this new invention is made up of wound thread of linen or cotton, constricted and affording spongy qualities, covered and reinforced by a rubber band. Leading horsemen pronounce it superior to iron tires, as more durable and cheaper, while possessing the noiseless, easy riding advantages of the pneumatic tire. A company has been organized for the manufacture of these tires.

—A Hamilton, Ohio, company is said to hold patents on a new barrel-making machine that turns out a complete barrel in two minutes, at a cost of 7 cents, against about eight or nine times that cost by present methods. It is further announced that a Rochester, New York, syndicate offers the owners of the machine \$500,000 cash for the right to manufacture it in the United States.

De Laval Cream Separators



Immediate and absolutely complete separation of cream from milk by machinery.

85,000 machines in use in every country in the world.

A saving of 10 to 20 per cent. in any climate, and 25 to 100 per cent. in warm countries.

Perfect separation and greatly improved quality of products.

Machines simple, durable and easily operated.

SATISFACTION GUARANTEED.

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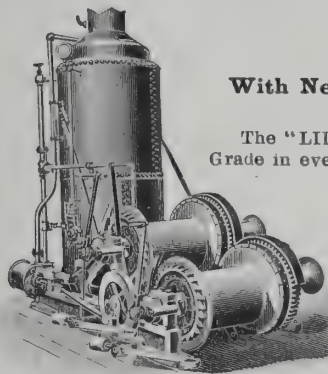
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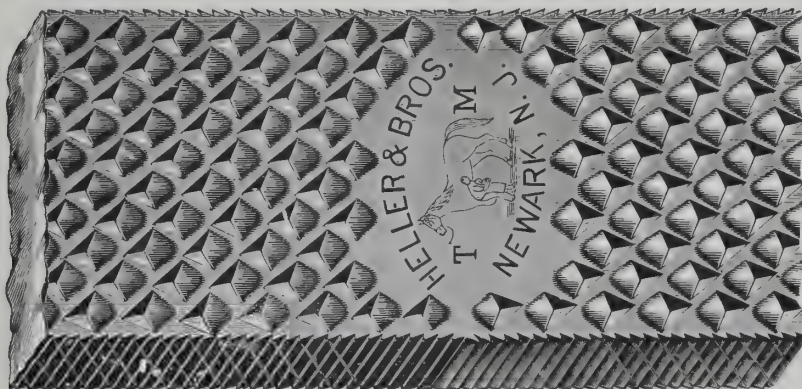
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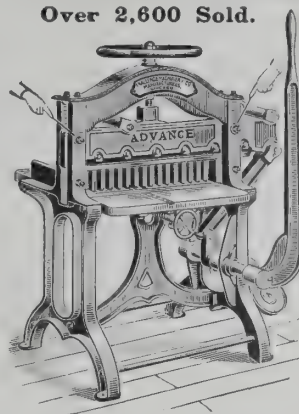


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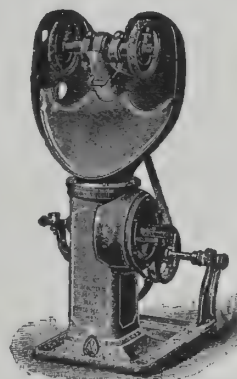
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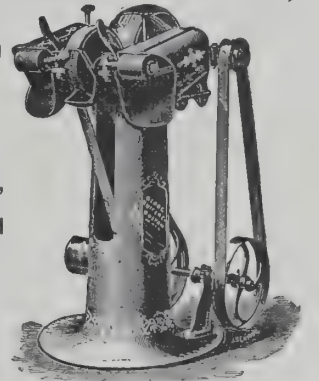
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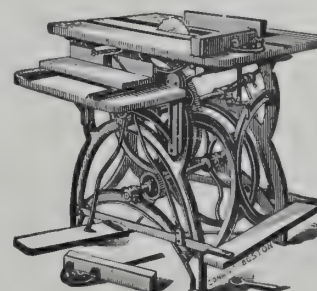
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Miscellaneous Notes.

—Vast quantities of American canned salmon are to be shipped to England this year.

—A tourist just returned from Europe says there is a good demand for American bicycles and agricultural implements.

—E. C. Stearns & Co., Syracuse, N. Y., U. S. A., received recently a cable order from Australia for several hundred wheels of different sizes.

—The California Fruit Transportation Company, of Sacramento, Cal., has sent out its fourth London special train of the season consisting of ten cars.

—The bread of youthful Europe was in the year 1895 lubricated for esophageal passage with 9,148,711 gallons of American molasses, for which the parents of youthful Europe paid \$850,400.

—The Pusey & Jones Company, of Wilmington, has completed the shipment of a quantity of paper-making machinery to Norway, and is manufacturing similar machinery for parties in Germany and Sweden.

—An order was received at the Newton Rubber Works last month for a pair of Straus tires to be shipped to the famous Corti Brothers, Florence, Italy. The tires were for a triplet machine to be used for racing purposes.

—A remarkable record was recently made at the works of the Youngstown Specialty Manufacturing Company, Youngstown, O., at which time 42,660 tin fruit cans were turned out ready for shipment in 12½ hours.

—The J. A. Fay & Egan Company report that they have recently doubled the capacity of a spoke factory at Jackson, Tenn., by taking out 10 old style lathes and substituting seven of their new improved automatic lathes.

—The Powell Planer Company, of Worcester, Mass., are building for the Sormovo Company, Nijni Novgorod, Russia, two large metal planing machines and two locomotive connecting-rod planers, the largest built in this country.

—It is reported that Corea has conceded to an American syndicate the right to construct a railroad from Seoul to Chemulpo and to work the minerals along the line of this road. Other concessions have been granted to France and Russia.

—The Dominion Government has given official notice of its intention to extend the time for the free entry of mining and smelting machinery into Canada to July 1, 1897. This gives those interested in mining a year longer to bring in their machinery.

—The Eclipse Cycle Company, of Elmira, N. Y., U. S. A., recently shipped a car load of 150 bicycles of the best grade to Melbourne, Australia, where the Eclipse Company will establish agencies. The company also have agencies at Tokio, Japan, and Hong Kong, China.

—The English trade journals discredit the quality of American hops for brewing, but in spite of that fact this important accessory to the beer manufacture went from America to the breweries of Great Britain last year to the amount of 17,523,388 pounds, valued at \$1,872,597.

—Just how to determine when a good machine has served its time and should be replaced by another is a puzzler to many an owner. The problem isn't so hard to solve if he can put in a new tool that has greater earning capacity with no increase in operating expenses. But to be certain about these things—there's the rub.

—In July there was shipped to England from Slatington, Pa., 75 carloads of roofing slate, and 13 additional carloads started on the same day for other European countries. These orders were secured by sending to Europe an agent to make plain to European builders and dealers the superior merit of the Pennsylvania roofing slate.

—Competition of American bicycle manufacturers is beginning to be felt seriously in England and on the Continent, and it is understood that an American firm is to begin immediately the construction of a large factory at Coventry, capable of turning out 5,000 bicycles yearly. According to report the American firm has planned the erection of a similar factory at Puteaux, France.

—As the English market is short of wheels American manufacturers are investigating the field in a desire to gain a firm foothold in that country. Of course, American makers regard their respective wheels as superior to those of English makers, but it remains to be seen if riders on the other side of the Atlantic can be prevailed on to accept that belief.

—American made shoes are finding a market in Germany. The peasants there used to wear wooden shoes, and these are still seen in the more rural parts of the empire. American shoes are far superior to the shoes made in England, the cheaper grades of which are almost incredibly rough and cumbersome, but which have been bought extensively in Germany.

—The Menominee (Mich.) Iron Works have made a formidable bid on saw-mill machinery for parties in Japan. The bid calls for a full equipment of saw-mill machinery with all the modern appliances and improvements for skillfully sawing lumber. The letter laid great stress on the fact that they wanted labor saving machinery of the very best quality. Natives are the only parties interested.

—Tucker & Dorsey Manufacturing Company, Indianapolis, Ind.: "The Tucker Alarm Till." A well-printed pamphlet illustrates and describes these cash tills, of which it is stated 750,000 are now in use in the United States. Attention is also called to the fact that the company are manufacturers of stove, barrel and warehouse trucks, saw bucks and buck saw frames, vegetable cutters and slicers, slaw and kraut cutters, towel rollers and racks, folding hat and coat racks, lemon squeezers, casters, etc.

—The Pekin University, Pekin, China, has set apart one of its buildings for the exhibition of foreign machinery and mechanical appliances. Pekin has a population of 600,000. The university is said to be the centre of a wide influence as it is attended by hundreds of young men in search of Western learning. American manufacturers are asked to make exhibits, and interested parties writing the university will be given full details.

—Nearly \$7,000 worth of paper was shipped from New York City to Sydney, Australia, during the week which ended yesterday. Over \$2,600 worth went to Melbourne, and there were these other large shipments during the week: to Antwerp, \$1,422 worth; to Laguayra, \$1,070 worth; to Mexican ports, \$2,153 worth. The value of all the paper exported from New York during the week was \$18,463.—*The Paper Mill*.

—It is reported that The Collins Plow Company, Quincy, Ill., U. S. A., is doing a thriving business in hay presses, recently making a shipment to Mexico, in which country, as well as several South American countries, it has a very nice and growing trade. The company is enterprising and puts out goods that make friends wherever introduced. It also shipped two carloads of presses to South America and will ship 100 plows later on.

—The largest blocks of copper ever shipped from the Rocky Mountain region are now being cast by the Anaconda Mining Company, of Butte, Mont., for shipment to St. Petersburg, Russia. They average in weight 3,600 pounds and measure 63 16 inches thick by 42 inches square. The company has an order for 200 long tons to be used for armor plate in lining battleships of the Russian Navy. After it arrives in Russia it will be rolled into sheets.

—Showing the great strides made by New Orleans, La., in exports in recent years, the following figures are interesting: Of lard, New Orleans in 1895 exported 726,216 pounds, and in 1896, 12,019,305 pounds, or an increase of 11,293,089. Her corn exports increase is prodigious. In 1895 2,572,362 bushels were exported and 19,676,703 bushels in 1896, or an increase of 17,104,341 bushels. And still the outward flow from the port continues. These figures are made up to June 30th this year.

—Two hundred and fifty tons of Alabama pig figured in the steamer Huntcliffe's manifest, which recently sailed from Mobile, Ala., for Manchester, England. This is the first direct shipment of pig iron from Alabama to Great Britain and the first vessel direct from Mobile to the new port of Manchester. A dispatch from Birmingham, Ala., June 9th, says ironmakers there have closed a contract for the sale of 50,000 tons of iron to parties in Genoa, Italy, who have heretofore been using English iron.

—A dispatch from San Francisco announces the arrival at that port of Sho Nemoto, a special commissioner from the Government of Japan sent to study the prospects for extension of commerce by Japanese steamship lines to Mexican, Central American and South American Pacific Coast ports. Mr. Nemoto will also investigate the advisability of securing cotton from the Southern States, petroleum from Pennsylvania and Eastern-made machinery directly through San Diego for transportation to Japan.

Exports and Imports.

THE exports of merchandise from the United States during the seven months ending July 31st of the present year show a gain over the corresponding period of last year in the sum of \$90,743,609. The imports of foreign merchandise fell off during the same period as compared with that of last year \$21,219,092.

During the first seven months of this year the exports of gold amounted to \$53,539,267, as against \$39,098,966 for the same period in 1895. Our gold imports for the first seven months of the present year amounted to \$26,072,625, as against \$26,556,397 in 1895.

The exports of silver coin and bullion for the first seven months of this year amounted to \$35,657,784, as against \$28,711,518 during the corresponding period of 1895. Our imports of silver during this period were \$6,783,537, against \$5,084,794 last year.

Leather Cloths.

LEATHER cloths are of American origin and are largely used in the trimming of shops. The first introduction of leather cloths in English carriage shops were as substitutes for enamelled leather, and were made of very stout material faced like enamelled leather. It was soon found, however, that this was a poor substitute, and in time other uses were found for them. These leather cloths were manufactured in certain lengths, same as ordinary carriage cloths, and of various qualities and colors to suit various uses. They have become a necessity in American carriage shops. Considerable of it is exported to England, France and Germany. The manufacturers send out samples on application of the different qualities, grains and colors, including prices.

California Fruit Abroad.

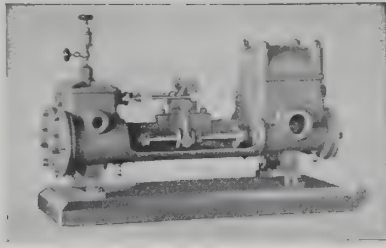
SHIPMENTS of California fruit to London promise to be more successful this year than ever before. Such shipments are made possible by the increased speed of transatlantic steamers, and were hardly dreamed of a dozen years ago. California fruit has now been well established in favor in London, but this has been accomplished without any help on the part of London fruit dealers. The latter have a few tricks that would put the original nutmeg man to shame, and one of them is to sell the best fruit as English hot-house fruit and the inferior quality as the genuine American product.

New York Offices and Warerooms,
72 CORTLANDT ST.

THE DEANE STEAM PUMP CO. HOLYOKE, MASS.

Pumps for Every Service.

BOILER FEEDING,
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TANK SERVICE
VACUUM PUMPS,
FIRE PURPOSES,
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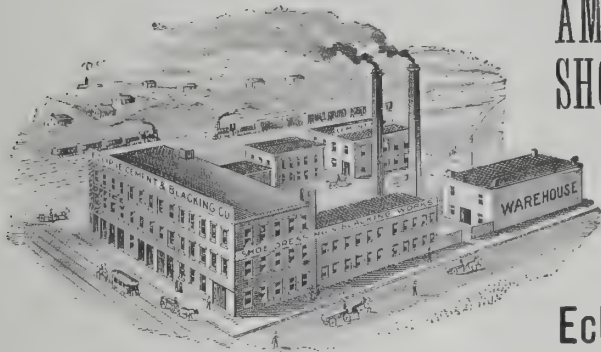


5 1/4 - 3 1/2 - 5 Duplex Pump.

Water Works Engines.

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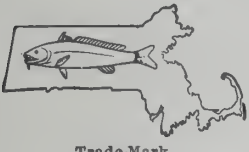
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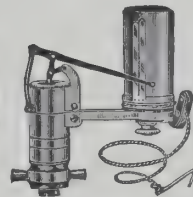
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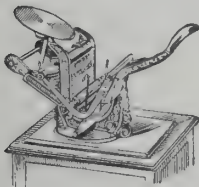
"Union" Hat Pouncing Paper,

"Union" Special Garnet Wood Working Paper.

WRITE FOR PRICE LIST "B."



Moulded Heel Scouring Paper.

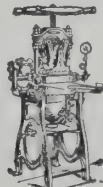


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ALL TOOLS AND SUPPLIES FOR STAMPS AND STENCILS.

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Soap Makers' and Butchers' Machinery,

462 Ellicott Street, Buffalo, New York, U. S. A.

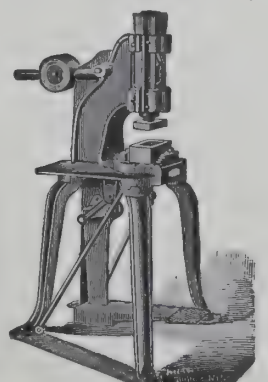
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FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry)...	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	21 1/4 inches.
Arobe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1 1/11 pounds.	do.....	Uruguay (double)...	7.776 bushels.	do.....	China, Japan and Sumatra.	133 1/2 pounds.
Arroba (dry)...	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single)...	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	Fanega (liquid)	Spain.....	16 gallons.	do.....	Philippine Islands	140 pounds.
do.....	Portugal.....	32.38 pounds.	Feddan.....	Egypt.....	1.03 acres.	Pie.....	(hemp).	
do.....	Spain.....	25.38 pounds.	Frail (raisins)...	Spain.....	50 pounds.	do.....	Philippine Islands	140 pounds.
do.....	Venezuela.....	25 4/24 pounds.	Frasco.....	Argentine Republic	2.5096 quarts.	Pie.....	(sugar).	
Arroba (liquid).	Cuba, Spain and Venezuela.	4.263 gallons.	do.....	Mexico.....	2.5096 quarts.	Pie.....	Argentine Republic	0.9478 foot.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	Pik.....	Castilian.....	0.91407 foot.
Arshine (qu're)	do.....	5.44 square feet.	Garnice.....	Russian Poland...	0.88 gallon.	Pik.....	Turkey.....	27.9 inches.
Artel.....	Morocco.....	1 1/2 pounds.	Gram.....	Metric.....	15.432 grains.	Pund (pound).	Russia.....	36.112 pounds.
Baril.....	Argentine Republic and Mexico.	20.0787 gallons.	Hectare.....	do.....	2.471 acres.	Quarter.....	Denmark, Sweden...	1.102 pounds.
Barrel.....	Malta (customs)...	11.4 gallons.	Dry.....	do.....	2.838 bushels.	do.....	Great Britain.....	8.252 bushels.
do.....	Spain (raisins)...	100 pounds.	Liquid.....	do.....	26.417 gallons.	Quintal.....	London (coal)...	36 bushels.
Berkovet.....	Russia.....	361.12 pounds.	Joch.....	Austria-Hungary...	1.422 acres.	do.....	Argentine Republic	101.42 pounds.
Bongkal.....	India.....	832 grains.	Ken.....	Japan.....	4 yards.	do.....	Brazil.....	130.06 pounds.
Bonw.....	Sumatra.....	7,086.5 square metres.	Kilogram (kilo)	Metric.....	2.2046 pounds.	do.....	Castile, Chile, Mex- ico and Peru.	101.61 pounds.
Bu.....	Japan.....	0 1/4 inch.	Kilometre.....	do.....	0.62137 mile.	do.....	Greece.....	123.2 pounds.
Butt (wine)...	Spain.....	140 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Newfoundland (fish)	112 pounds.
Caffiso.....	Malta.....	5 1/4 gallons.	Kota.....	Japan.....	5.13 bushels.	do.....	Paraguay.....	100 pounds.
Candy.....	India (Bombay)...	529 pounds.	Korree.....	Russia.....	3.5 bushels.	do.....	Syria.....	125 pounds.
do.....	India (Madras)...	500 pounds.	Last.....	Belgium, Holland...	85.134 bushels.	do.....	Metric.....	220.46 pounds.
Cantar.....	Morocco.....	113 pounds.	do.....	England (dry malt)...	82.52 bushels.	Rottle.....	Palestine.....	6 pounds.
do.....	Syria (Damascus)...	55 pounds.	do.....	Germany.....	2 metric tons (4,480 pounds.)	do.....	Syria.....	5 1/2 pounds.
do.....	Turkey.....	14.7036 pounds.	do.....	Prussia.....	112.29 bushels.	Sagen.....	Russia.....	7 feet.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Russian Poland...	113 1/2 bushels.	Salm.....	Malta.....	490 pounds.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Spain (salt).....	4.760 pounds.	Se.....	Japan.....	3.6 feet.
Catty.....	China.....	1.333 1/2 (1 1/3) pounds.	League (land)...	Paraguay.....	4.633 acres.	Seer.....	India.....	1 pound 13 ounces.
do.....	Japan.....	1.31 pounds.	Li.....	China.....	2.115 feet.	Shaku.....	Japan.....	10 inches.
do.....	Java, Siam, Malacca	1.35 pounds.	Libra (pound)...	Castilian.....	7.100 grains (troy).	Sho.....	do.....	1.6 quarts.
do.....	Sumatra.....	2.12 pounds.	do.....	Argentine Republic	1.0127 pounds.	Standard (St. Petersburg)...	Lumber measure...	165 cubic feet.
Cen'ero.....	Central America...	4.2631 gallons.	do.....	Central America...	1.043 pounds.	Stone.....	British.....	14 pounds.
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Chile.....	1.014 pounds.	Suerte.....	Uruguay.....	2,700 cuadras (see cua- dra).
do.....	Darmstadt.....	110.24 pounds.	do.....	Cuba.....	1.0161 pounds.	Tael.....	Cochin China.....	590.75 rains (troy).
do.....	Denmark, Norway...	110.11 pounds.	do.....	Mexico.....	1.01465 pounds.	Tan.....	Japan.....	0.25 acre.
do.....	Nuremberg.....	112.43 pounds.	do.....	Peru.....	1.0143 pounds.	To.....	do.....	2 1/2 ecks.
do.....	Prussia.....	113.44 pounds.	do.....	Portugal.....	1.011 pounds.	Ton.....	Space measure...	40 cubic feet.
do.....	Sweden.....	93.7 pounds.	do.....	Uruguay.....	1.0143 pounds.	Tonde (cereals)...	Denmark.....	3,94783 bushels.
do.....	Vienna.....	123.5 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tondeland.....	do.....	1.36 acres.
do.....	Zollverein.....	110.24 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tsubo.....	Japan.....	6 feet square.
do.....	Double or metric...	220.46 pounds.	Live (pound)...	Greece.....	1.1 pounds.	Tsun.....	China.....	1.41 inches.
Chih.....	China.....	14 inches.	do.....	Guiana.....	1.0791 pounds.	Tunna.....	Sweden.....	4.5 bushels.
Coyan.....	Sarawak.....	3,098 pounds.	Load.....	England (timber)...	Square 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	Tunnland.....	do.....	1.22 acres.
do.....	Siam (Koyan)...	2,667 pounds.	Manzana.....	Costa Rica.....	1 1/2 acres.	do.....	Argentine Republic	34.1208 inches.
Cuadra.....	Argentine Republic	4.2 acres.	Marc.....	Bolivia.....	0.507 pound.	do.....	Castile.....	0.914117 yard.
do.....	Paraguay.....	78.9 yards.	Maund.....	India.....	82 1/2 pounds.	do.....	Central America...	38.74 inches.
do.....	Paraguay (square)...	8,077 square feet.	Metre.....	Metric.....	39.37 inches.	do.....	Chile and Peru...	33.367 inches.
do.....	Uruguay.....	Nearly 2 acres.	Mil.....	Denmark.....	4.68 miles.	do.....	Cuba.....	33.384 inches.
Cubic metre...	Metric.....	35.3 cubic feet.	do.....	Denmark (geograph- ical).....	4.61 miles.	do.....	Curacao.....	33.375 inches.
Cwt. (hundred- weight).....	British.....	112 pounds.	Morgen.....	Prussia.....	0.63 acre.	do.....	Mexico.....	33 inches.
Dessiatine.....	Russia.....	2,6997 acres.	Oke.....	Egypt.....	2,7225 pounds.	do.....	Paraguay.....	34 inches.
do.....	Spain.....	1,599 bushels.	do.....	Greece.....	2.84 pounds.	do.....	Venezuela.....	33.384 inches.
Drachme.....	Greece.....	Half ounce.	do.....	Hungary.....	3.0617 pounds.	Vedro.....	Russia.....	2,707 gallons.
Dun.....	Japan.....	1 inch.	do.....			Vorges.....	Isle of Jersey...	71.1 square rods.
Egyptian wts. and measures.	(See CONSULAR RE- PORTS No. 144.)		do.....			Verst.....	Russia.....	0.663 mile.
Fanega (dry)...	Central America...	1.5745 bushels.	do.....			Vlocka.....	Russian Poland...	41.98 acres.

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes - ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.305 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.

Length.	Surface.	Capacity.	Weight.	Notation.
Myriametre.....			Metric ton.....	1,000,000
Kilometre.....			Quintal.....	100,000
Hectometre.....			Myriagram.....	10,000
Decametre.....			Kilogram.....	1,000
METRE.....			Hectogram.....	100
Decimetre.....			Decagram.....	10
Centimetre.....			GRAM.....	1
Millimetre.....			Decigram.....	0.1
			Centigram.....	0.01
			Milligram.....	0.001

EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.

1 kilometre.....	0.62137 mile.	1 mile.....	1.60935 kilometres.
1 metre.....	3.28083 feet.	1 yard.....	0.914402 metre.
1 centimetre.....	0.3937 inch.	1 foot.....	0.304801 metre.
1 hectare.....	2.471 acres.	1 inch.....	25.4001 millimetres.
1 are.....	119.6 square yards.	1 square mile.....	2.59 square kilometres.
1 metric ton.....	2,204.62 pounds.	1 acre.....	0.4047 hectare.
1 kilogram.....	2.20463 pounds.	1 square foot.....	9.29 square decimetres.
1 gram.....	15.43236 grains.	1 pound.....	0.453 59 kilograms.
1 hectolitre.....	2.8377 bushels.	1 grain.....	64.7989 milligrams.
1 hectolitre.....	26.417 gallons.	1 bushel.....	0.3239 hectolitre.
1 litre.....	1.0567 quarts.	1 gallon.....	3.78543 litres.
1 stere.....	1.308 cubic yards.	1 cubic foot.....	0.02832 cubic metre.

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.
Millimetres $\times 25.4$ = inches.
Centimetres $\times 0.3937$ = inches.
Centimetres $\times 2.54$ = inches.
Metres $\times 39.37$ = inches. (Act Congress.)
Metre $\times 3.281$ = feet.
Metres $\times 1.094$ = yards.
Kilometres $\times 0.621$ = miles.
Kilometres $\times 1.6093$ = miles.
Kilometres $\times 3.2807$ = feet.
Square millimetres $\times 0.0155$ = sq. inches.
Square millimetres $\times 645.16$ = sq. inches.
Square centimetres $\times 0.155$ = sq. inches.

Square centimetres $\times 6.451$ = sq. inches.
Square metres $\times 10.764$ = sq. feet.
Square kilometres $\times 247.1$ = acres.
Hectare $\times 2.471$ = acres.
Cubic centimetres $\times 16.383$ = cubic inches.
Cubic centimetres $\times 3.60$ = fl. drams.
Cubic centimetres $\times 29.57$ = fluid oz. (U. S. P.)
Cubic metres $\times 35.315$ = cubic feet.
Cubic metres $\times 1.308$ = cubic yards.
Cubic metres $\times 264.2$ = gallons (231 cu. in.)
Litres $\times 61.022$ = cubic in. (Act Congress.)
Litres $\times 33.84$ = fluid ounces (U. S. Phar.)
Litres $\times 0.2642$ = gallons (231 cu. in.)
Litres $\times 3.78$ = gallons (231 cu. in.)

Litres $\times 28.316$ = cubic feet.
Hectolitres $\times 3.531$ = cubic feet.
Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)
Hectolitres $\times 0.131$ = cubic yards.
Hectolitres $\times 26.42$ = gallons (231 cu. in.)
Grams $\times 15.432$ = grains. (Act Congress.)
Grams = 981 = dynes.
Grams (water) $\times 29.57$ = fluid ounces.
Grams $\times 28.35$ = ounces avoirdupois.
Grams per cu. cent. $\times 27.7$ = lbs. per cu. in.
Joule $\times 0.7373$ = foot pounds.
Kilograms $\times 2.2046$ = pounds.
Kilograms $\times 35.3$ = ounces avoirdupois.
Kilograms $\times 1,102.3$ = tons (2,000 lb.)

Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Kilogram-metres $\times 7.23$ = foot lbs.
Kilo per metre $\times 0.672$ = lbs. per foot.
Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Kilo per cheval $\times 2.235$ = lbs. per H. P.
Kilowatts $\times 1.34$ = horse-power.
Watts $\times 746$ = horse-power.
Watts $\times 0.7373$ = foot pounds per second.
Calorie $\times 3.968$ = B. T. U.
Cheval vapeur $\times 0.9863$ = horse-power.
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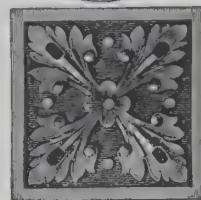
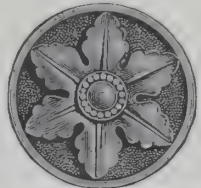


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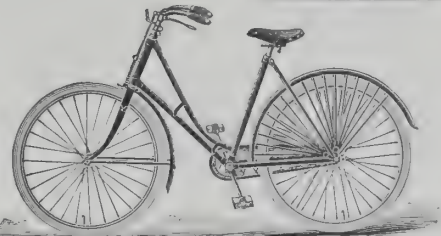
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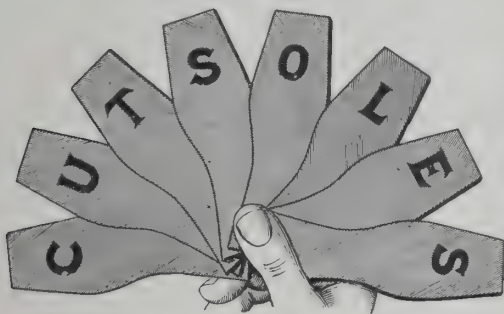
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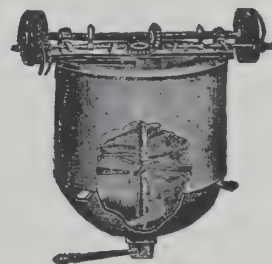
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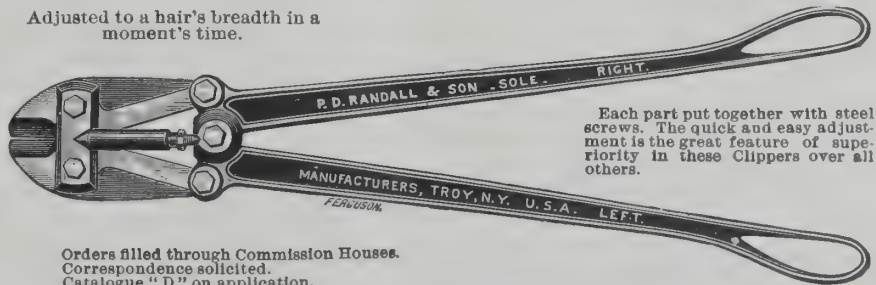
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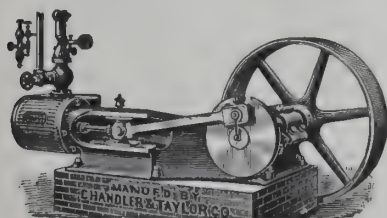
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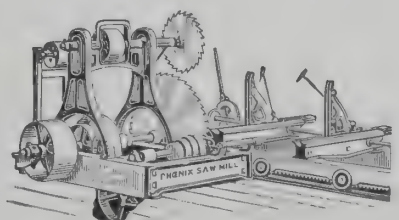
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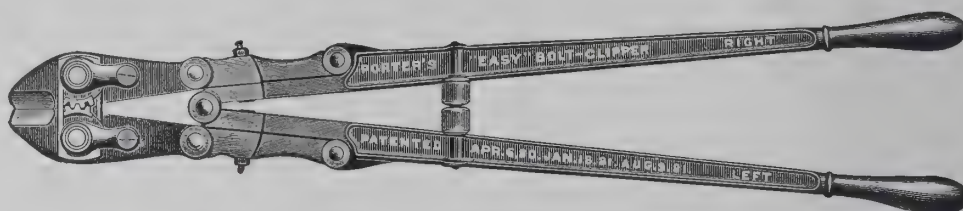
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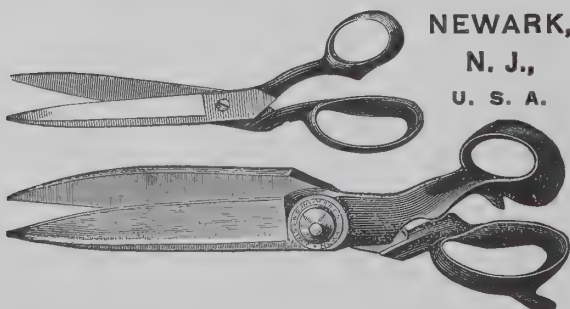
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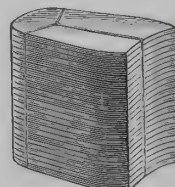
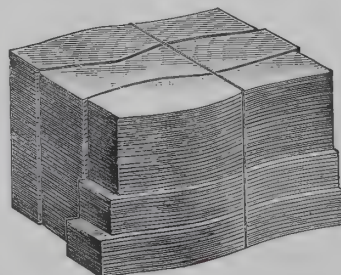
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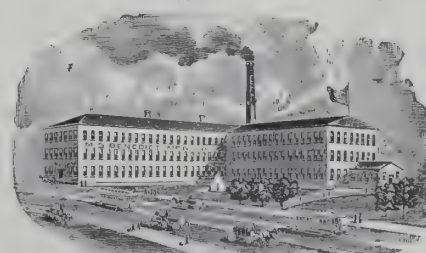
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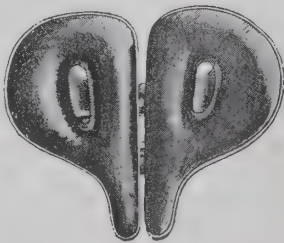
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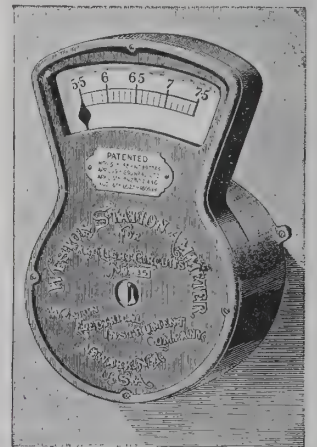
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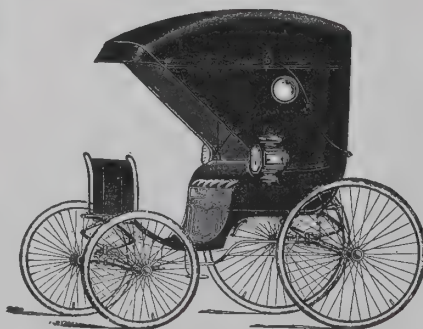
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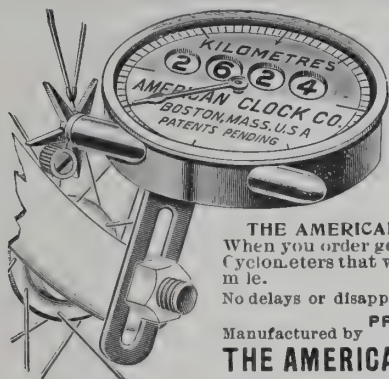
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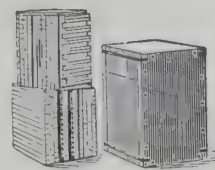
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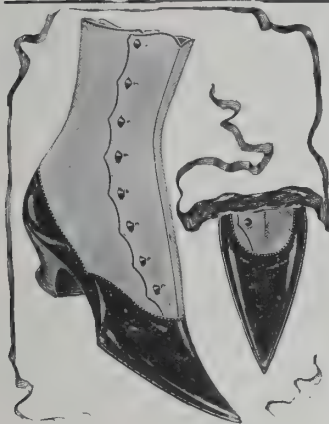
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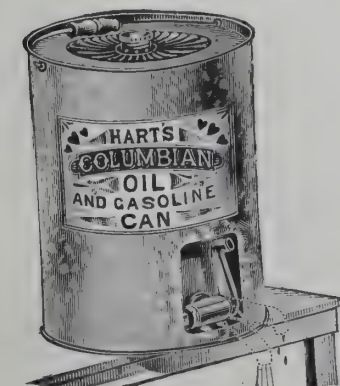
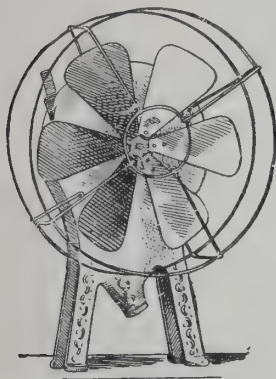
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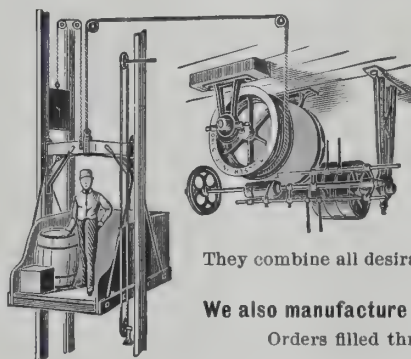
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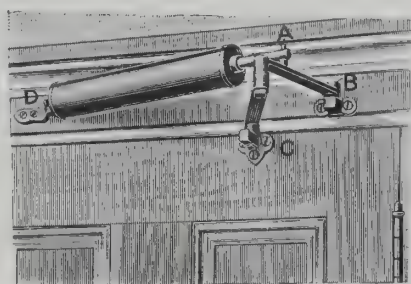
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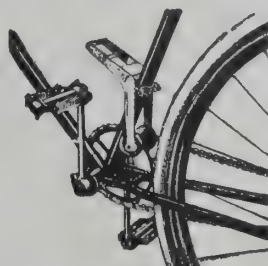
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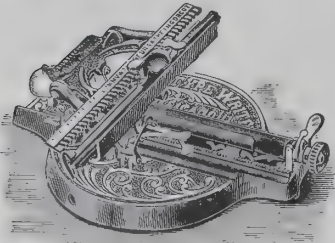
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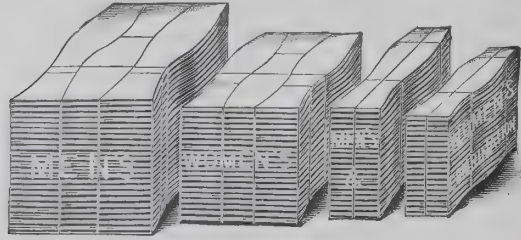
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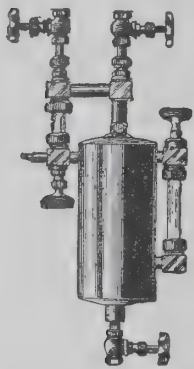
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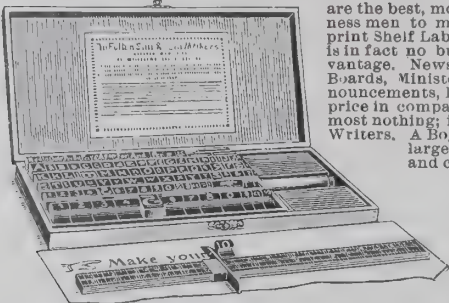
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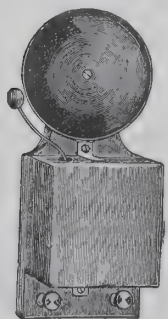
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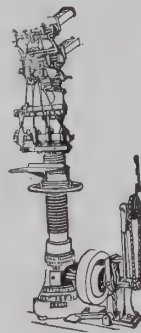
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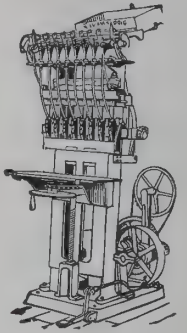
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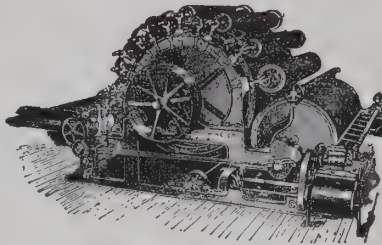
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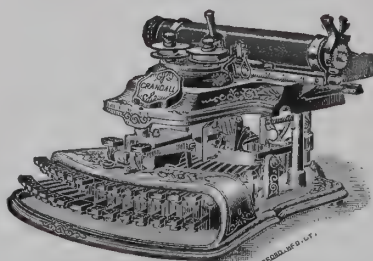
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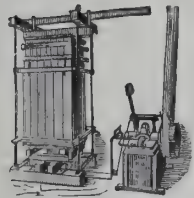
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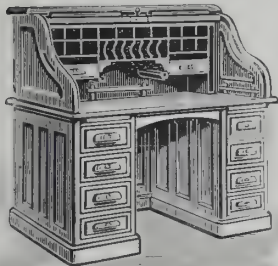
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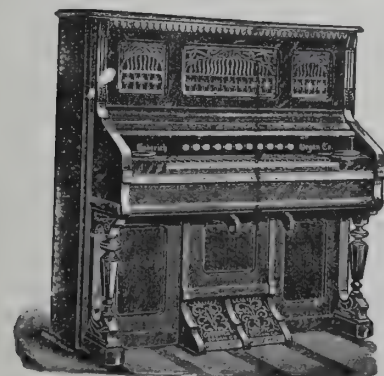
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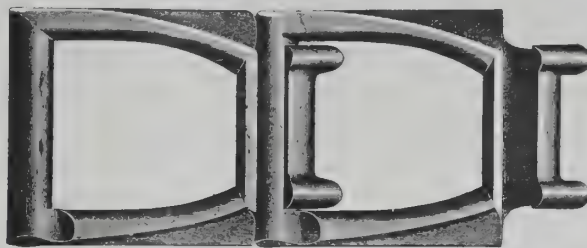
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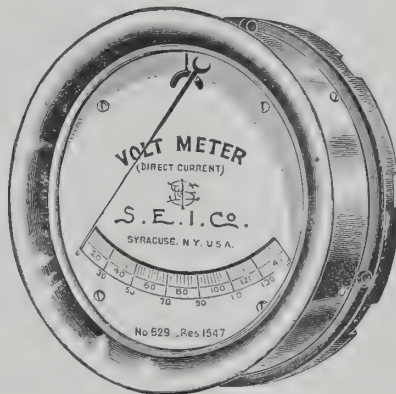
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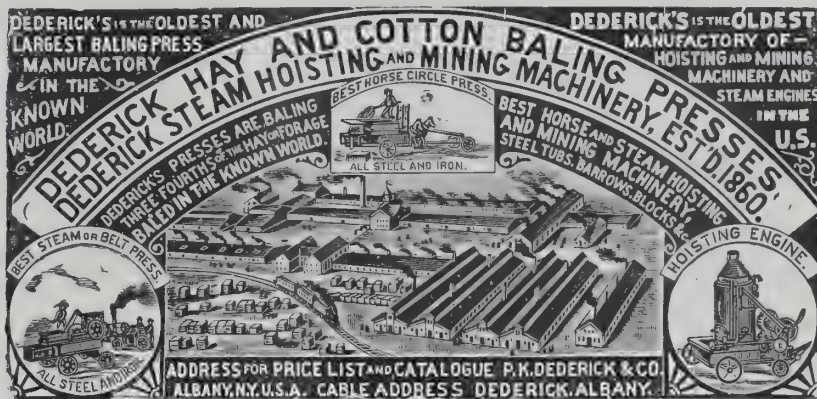
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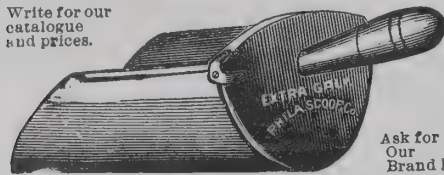
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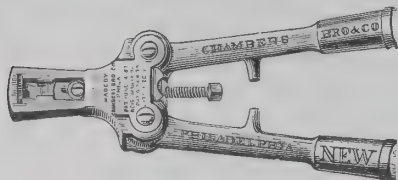
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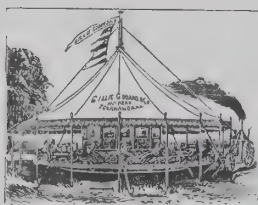
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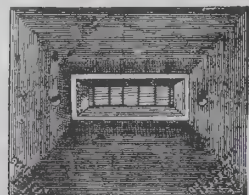
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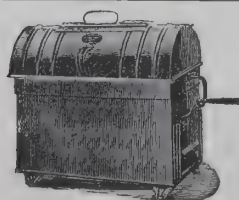


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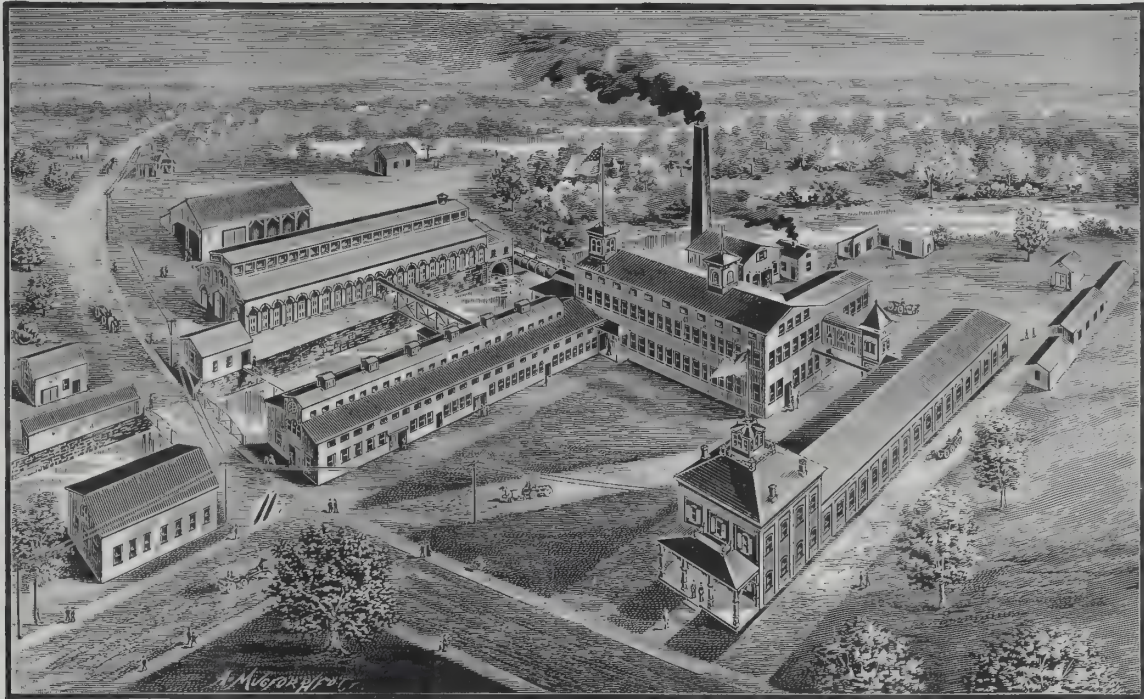
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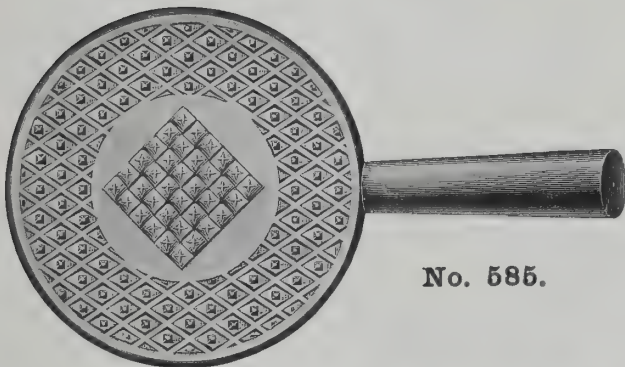
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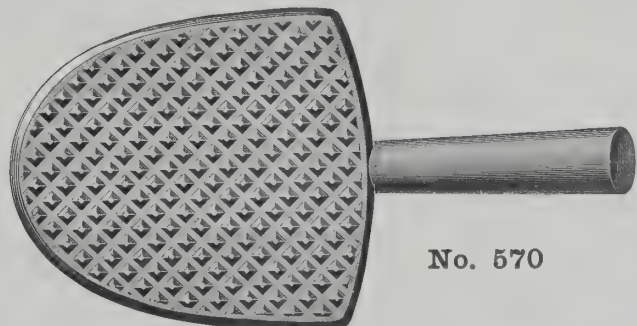
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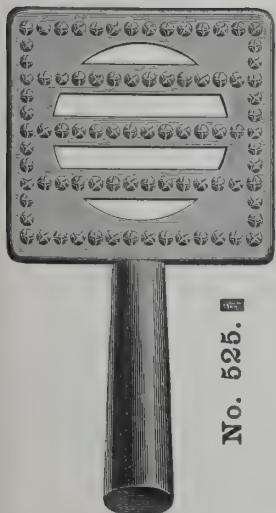
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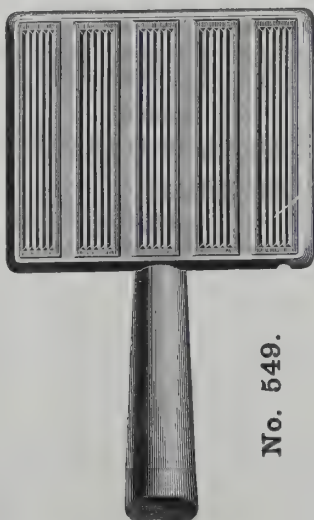
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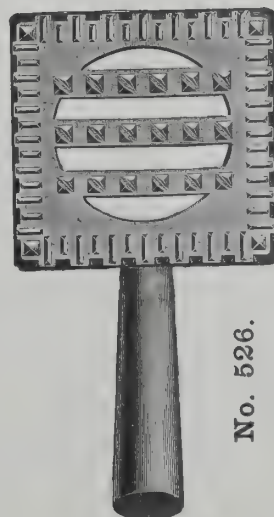
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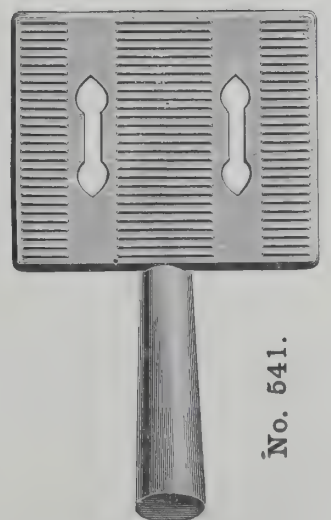
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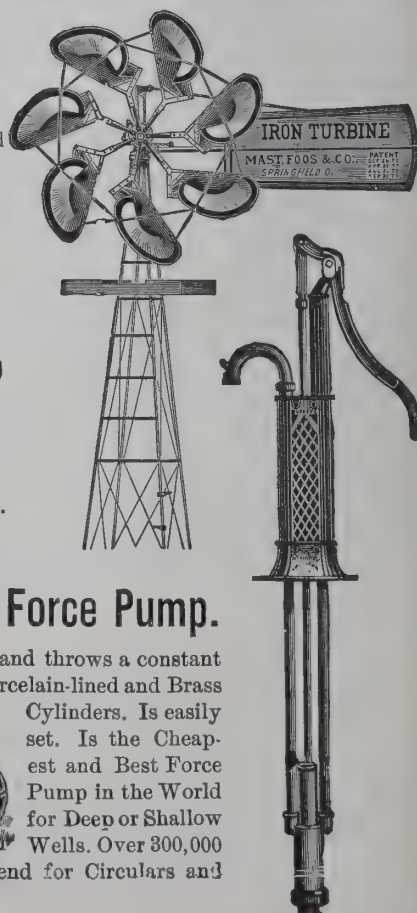
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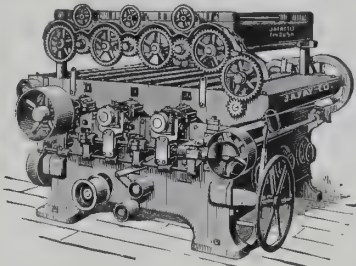
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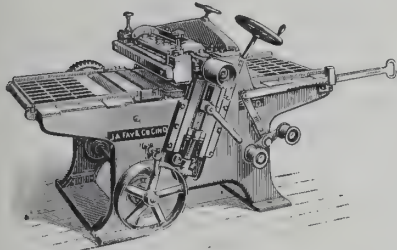
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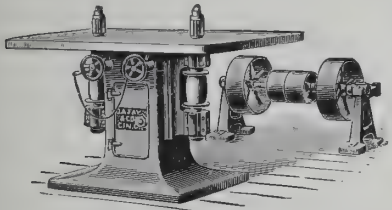
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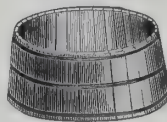
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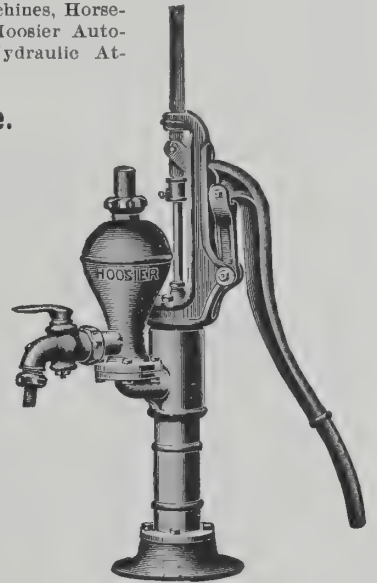
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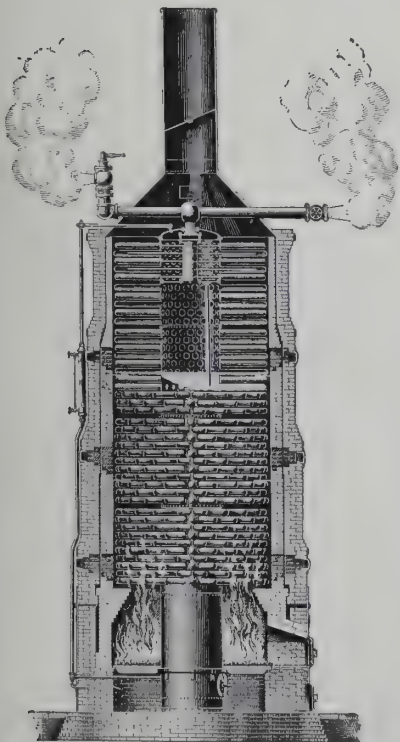
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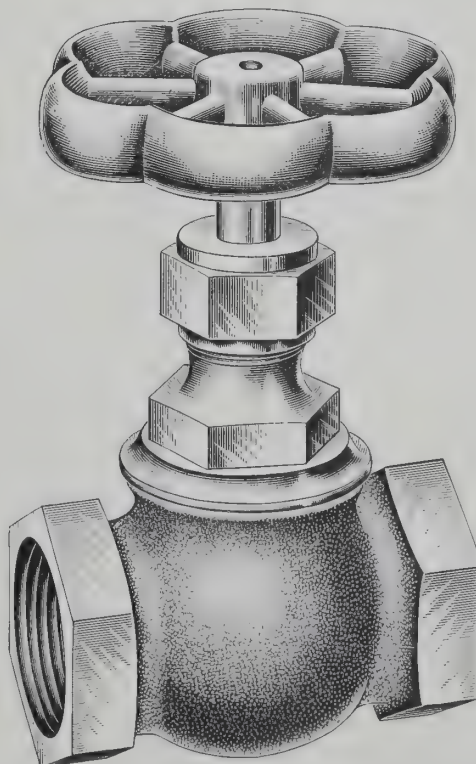
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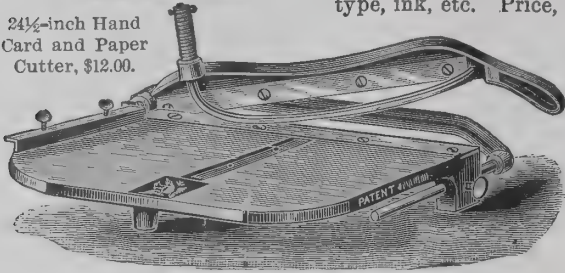
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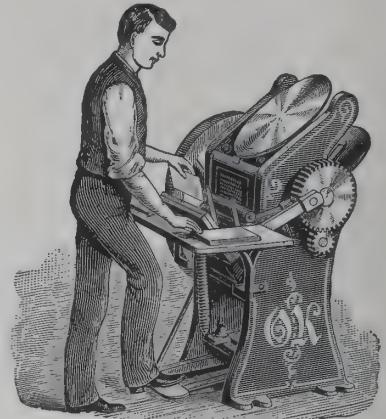
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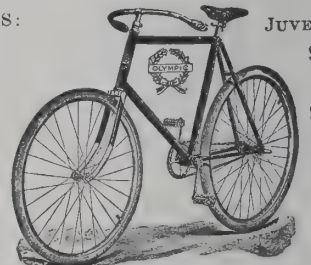
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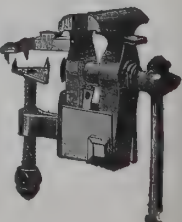
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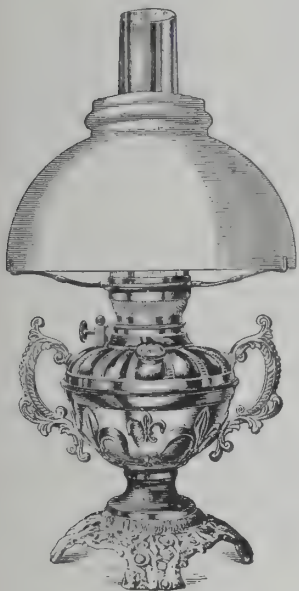


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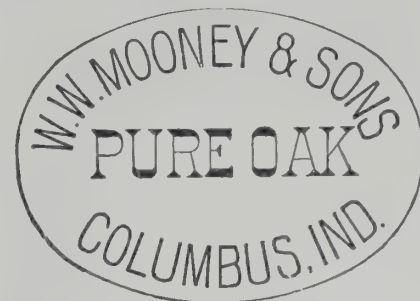
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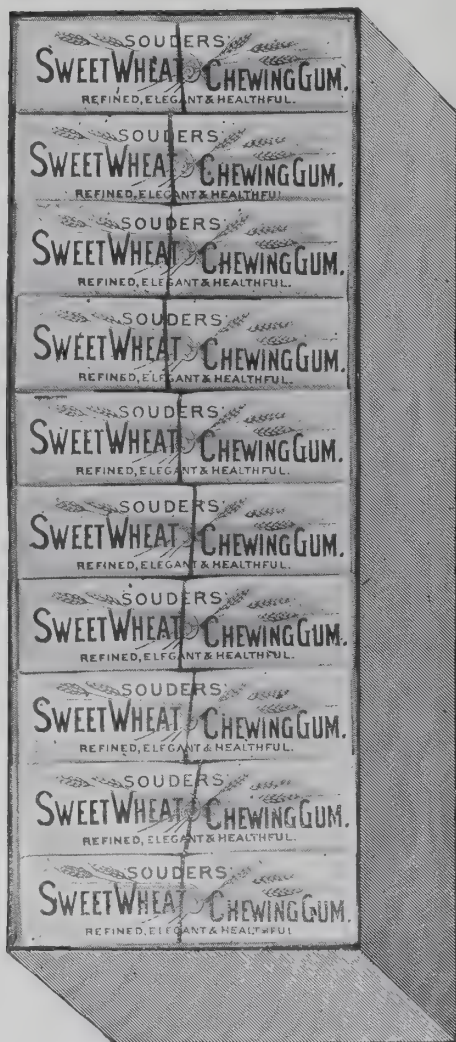
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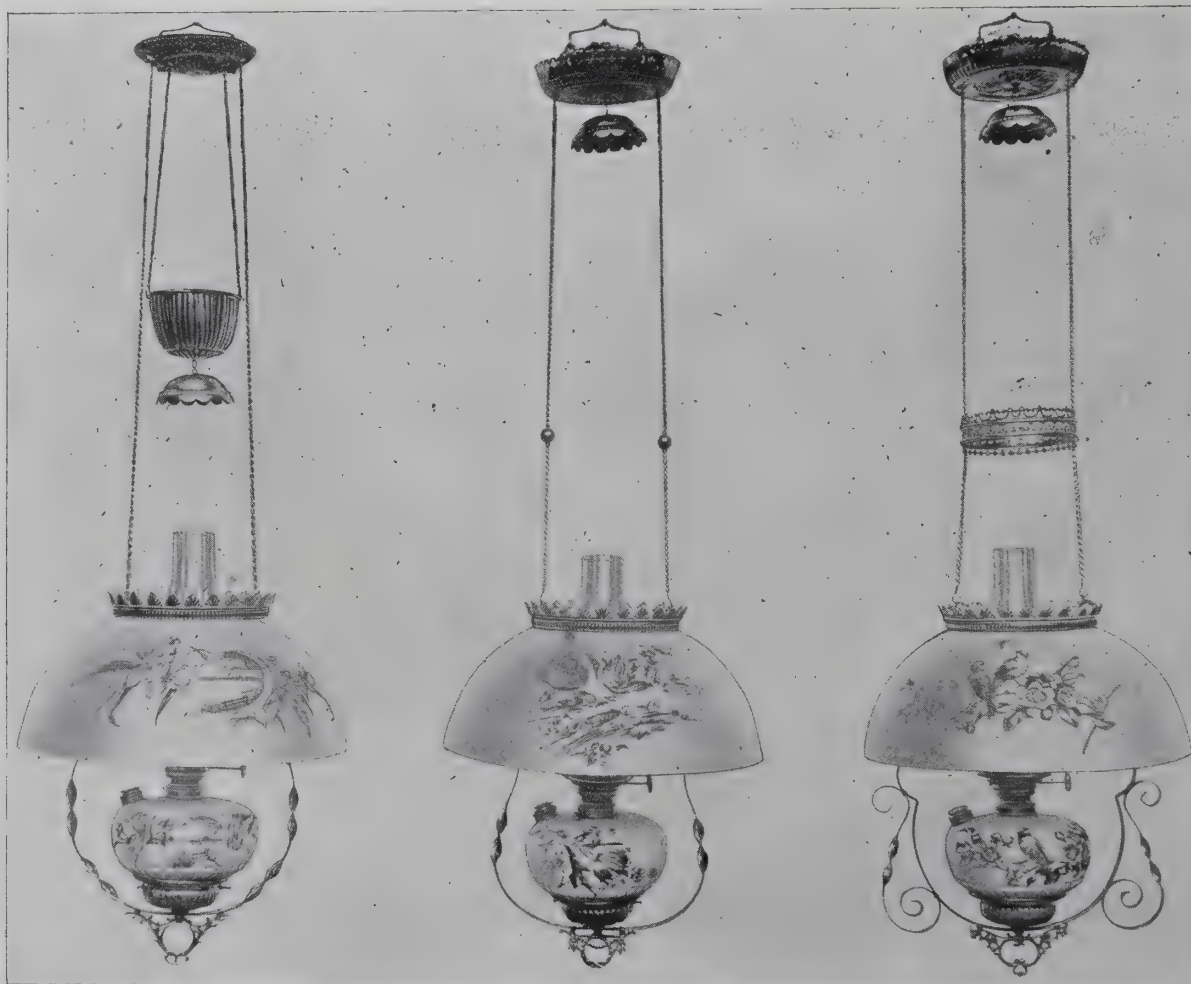
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THE AMERICAN EXPORTER.

ALLEN RIPLEY FOOTE, EDITOR.

THE JOHN C. COCHRAN COMPANY, Publishers

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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	Dederick, P. K. & Co.—Agricultural Implements..... 49
Akron Belting Co.—Leather Belting... 47	Densmore Typewriter Co..... 33
American Lamp & Brass Co.—Lamps... 8	De la Balze Hermanos..... —
American Clock Co.—Cyclometers..... 47	De Lamar Iron Works—Hot-Air Pumping Engines..... 25
American Writing Machine Co.—Caligraph..... 15	De Laval Separator Co.—Cream Separators..... 35
Anderson & Co., Magnus—Exporters and Importers..... 47	Diago, Frederico C..... —
Armitage-Herschell Co.—Steam Riding Gallery..... 48	Dietz, R. E. Co.—Lamps..... 31
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Diamond Hardware Co.—Stove Polishing Mitten..... 33
Ayer, J. C. Co.—Patent Medicines..... 25	Divine Bros.—Buffing Wheels..... 50
Ball & Co., Dayton—Shoe Lasts..... 41	Donegan & Swift—Engines, Injectors, etc..... 51
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 37
Barnett Co., G. & H.—Files..... 21	Dolz, W. S.—Box Nailing Machines..... 48
Baxter, Schenkelberger & Co.—Cut Soles..... 33	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc..... 37
Bay State Cut Sole Co..... 48	Douglas, W. & B.—Pumps, etc..... 15
Beacon Lamp Co.—X-Ray Tubes and Incandescent Lamps..... 31	Dry Kalsomine & Fresco Paint Works..... 23
Bellis Cycle Co..... 23	Eagle Cotton Gin Co.—Cotton Gins..... 33
Benedict Mfg. Co., M. S.—Silver Plated Ware..... 45	Eclipse Cement & Blacking Co..... 37
Bennett & Co., H. L.—Stump Pullers... 41	Eco Magnetic Clock Co.—Electric Clocks..... 50
Black Mfg. Co.—Bicycles..... 31	Electric Emery Wheel Co..... 50
Blanchard Machine Co.—Disintegrators..... 31	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Bolzano Co., John—Water Motor and Fan..... 47	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Boyer, E. C.—Railroad and Wagon Lifting Jacks..... 41	Flagg Mfg. Co.—Shoe Machinery..... 35
Brigham & Co., F. L.—Shoes..... 47	Flint & Walling Mfg. Co.—Wind Mills, Pumps, etc..... 5
Brown & Co., B. F.—Shoe Dressing..... 45	Fulton Iron Works—Sugar Cane Mills..... 26
Brown & Co., S. N.—Wheels, Hubs, Spokes, etc..... 50	Fulton Stamp Works..... 48
Buckeye Incubator Co.—Incubators and Brooders..... 49	Furbush & Son Machine Co., M. A..... 48
Buffalo Cycle Co.—Bicycles..... 39	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 25
Buffalo Portable Steel House Co..... 50	General Electric Co.—Electrical Machinery..... 16
Burgess, Edward A.—Box Nailing and Trimming Machines..... 50	Gernert Bros. Lumber Co.—Pressed Wood Ornaments..... 39
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 49	Gillie, Goddard & Co.—Carousels..... 50
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 35	Globe Buffer Co.—Shoe Machinery..... 35
Chamberlin Mfg. Co.—Stump Pullers... 47	Goderich Organ Co.—Organs, Stools, etc..... 49
Chambers Bros. Co.—Bolt Clippers..... 50	Goubert Mfg. Co..... 16
Chandler & Taylor Co.—Steam Engines and Boilers..... 39	Gould Packing Co.—Steam and Water Packing..... 23
Chicago Car Seal and Mfg. Co..... —	Goulds Mfg. Co.—Pumps of all kinds... —
Chicago Metal Stamping Co..... —	Gout Mfg. Co., David D. A..... 47
Columbus Phaeton Co..... 46	Green Bros.—Watchmakers' and Jewelers' Tools and Supplies..... 6
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 46	Hancock Inspirator Co.—Boiler Feeders..... 51
Cornell & Co., F. H.—Boiler Oil Injector..... 48	Harrington & King Perforating Co.—Mining Screens..... 25
Crandall Machine Co.—Typewriters.... 48	Hart Mfg. Co.—Faucet Can..... 47
Cretors & Co., C.—Peanut Roasters..... 50	Hartshorn Co., Stewart—Shade Rollers..... 2
Crosby Steam Gage and Valve Co.—Safety and Water Valves..... —	Hastings & McIntosh Truss Co..... 33
Cumberland Iron & Steel Shafting Co. 39	Hauthaway, C. L. & Sons—Shoe Dressing..... 21
Deane Steam Pump Co.—Steam Pumps 37	Hay & Willits Mfg. Co.—Bicycles..... 35
	Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 5

PAGE	PAGE
Hazelton Boiler Co..... 5	Philadelphia Scoop Co..... 50
Heller & Bros.—Files, Rasps, etc..... 35	Plume & Atwood Mfg. Co.—Lamps.... 7
Henderson & Co., C. H.—Cut Soles..... 39	Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 45
Holmes & Edwards Silver Co.—Spoons and Forks..... 6	Porter, H. K.—Bolt Clippers..... 41
Horrocks Desk Co..... 49	Premier Pen Co.—Fountain Pens..... 33
Houchin & Huber—Soap and Candle Machinery..... 39	Randall & Son, P. D.—Bolt Clippers... 39
Hough Cash Recorder Co..... 23	Rhyder, W. J.—American Commercial Agency..... —
Huntley Mfg. Co.—Flour Mill Machinery..... 29	Rockwell & Co., C. A.—Coffee Mills... 47
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 47	Root Co., A. I.—Beekkeepers' Supplies.. 41
James & Co., George—Soles, Taps, Heels, etc..... 41	Royal Remedy & Extract Co.—Sweet Wheat Chewing Gum..... 8
Jeffrey Mfg. Co.—Detachable Chain Belting..... 49	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 21
Jenkins Bros.—Packings..... 31, 33	S. E. I. Co.—Voltmeters & Ammeters.. 49
Kelsey & Co.—Printing Presses..... 6	Samson Cordage Works—Cords of all kinds..... 37
Keystone Mfg. Co.—Agricultural Implements..... 26	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 51
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Savage Repeating Arms Co.—Rifles... 52
Layman Pneumatic Boat and Sporting Goods Co..... 46	Schamlandian, D..... —
Leffel, Jas. & Co.—Water Wheels and Steam Engines..... 16	Schollhorn Co., Wm.—Shears and Scissors..... 23
Lidgerwood Mfg. Co.—Hoisting Engines..... 35	Schrader's Son, A.—Diving Apparatus. 50
Marston & Co., J. M.—Foot and Hand Power Saws..... 35	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 48
Martin & Co., W. E.—Shoe Dressing.... —	Silver Lake Co.—Braided Cordage..... 39
Mast, Foos & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 4	Simonds Mfg. Co.—Saws..... 35
McCammon Piano Co..... 46	Smith & Co., H. D.—Carriage Hardware. 3
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Stallman, F. A.—Dresser Trunks..... 49
Monarch Cycle Co.—B cycles..... 7	Standard Hammock Mills..... 50
Mooney & Sons, W. W.—Tanners and Curriers..... 7	Standard Tool Co.—Twist Drills, etc... 23
Morris European and American Express Co..... 49	Stanley Works, The—Brackets..... 21
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 46	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 4
Myers, S. F. & Co.—Jewelry of all kinds 6	St. Joseph Pump Mfg. Co.—Water Elevator..... 25
National Meter Co.—Water Meters..... 19	Stietjes & Co., F.—Importers..... 50
National Starch Mfg. Co.—Maizena..... 29, 43, 44	Stubbs' Mercantile Agency..... 45
New Jersey Paint Works—Copper Paint, etc..... 25	Sturtevant Co., B. F.—Pressure Blowers..... 51
New Process Twist Drill Co..... 23	Sweinhart Co., V. H.—Combination Locks..... 46
New York City Peanut Roaster Works 50	Talbot & Co., W. E.—Brick Machinery
New York Motor Co..... 51	Tanite Co., The—Emery Wheels, Whetstones, etc..... 52
Nicholson File Co.—Files..... 21	Tarr, James H.—Copper Paint..... 45
Norman & Evans—Steam Merry-go-rounds..... 50	Thompson, A. R.—Tuyere Irons..... 50
Odell Typewriter Co.—Typewriters.... 48	Thompson Diphtheria Cure Co..... 41
Onken Co., Oscar—Triplicate Mirrors... 31	Thompson Meter Co.—Water Meters... 52
Osborne & Co., C. S.—Saddle and Harness Tools..... 50	Thresher Electric Co.—Electrical Machinery..... 15
Parke & Co., John Y.—Bicycle Brake... 47	Tribby Shoe Polish Mfg. Co..... 4
Parkhurst Bros. & Co.—Elevators..... 47	Tubular Rivet & Stud Co..... 51
Partrick & Carter Co.—Electrical Supplies..... 48	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 46
Pelton Water Wheel Co..... 2	Union Sand Paper & Emery Wheel Co. 37
Peru Electric Mfg. Co.—Porcelain Tubes and Carbon "atteries"..... 21	U. S. Buggy & Cart Co.—Wagons and Carriages..... —
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	U. S. Playing Card Co..... 2

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to originate trade, and not to execute orders, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

It does not take goods in exchange for advertising space.

It does not employ the purchasing power of commission merchants and shippers to influence patronage.

NOTICE TO ADVERTISERS.

We desire it distinctly understood by our customers and those who contemplate making use of our publications, THE AMERICAN EXPORTER and EL EXPORTADOR AMERICANO, that space in these journals for advertising purposes is sold only upon the merits of the publications—for that purpose. For this reason, no advertising solicitor or agency has any right, or authority, to agree to perform any special service whatever to obtain orders for advertising.

We make it a practice not to discuss the merits or demerits of other export trade papers. Comments on their value may be made with more propriety by those advertisers who have had experience in the use of such publications.

THE JOHN C. COCHRAN CO.

AMERICAN INVASION OF FOREIGN MARKETS.

THOSE who are in a position to observe know that the world is about to witness a shifting of the currents of commerce that will have as marked an effect upon the progress of civilization as did the invention of the printing press and the discovery of America. The one made universal intelligence possible, the other expanded the area of enterprise and placed at the command of civilized humanity exhaustless natural resources from which the commodities of commerce can be supplied. The trend of the operation of these two forces, universal intelligence and the universal distribution of commodities, exerts an ever-increasing pressure upon the policies of nations, the facilities of exchange and the course of trade.

Facilities for distribution have abolished the possibility of a famine in any quarter of the globe. The paramount demands of industry and commerce will as surely abolish the possibility of a great war between civilized nations. The mutual interests of commerce are rapidly making the products of all countries welcome in every market, where they encounter the competition of the world, which is continually compelling the old, cumbersome and crude to give place to the new. The mechanism of the age is without a parallel in history. Machines that are now operated as if by instinct would have been beyond the comprehension of the people of the last generation. To illustrate, 30 years ago woman's idea of mechanism was wholly undeveloped. To-day she masters the sewing-machine, the typewriter, the bicycle and numberless machines in manufacturing establishments as naturally as though the management of machinery was not an acquired art. Upon this foundation the commerce of the future will rest.

When it is observed to what great extent the industrial and commercial activities of the world have taken direction from American inventions and ideas no violent effort of the imagination is required to see that the time is approaching when American business methods will be brought into requisition to place American products in the markets of the world under their rightful designation of "American Made." Foreigners do not concede that the competition of American goods is a serious factor in any line so long as their introduction is controlled by improperly qualified native importers, who are willing enough to fill an order and equally unwilling to do the work of initiating trade and creating a demand for an unknown article, machine or tool. But as soon as the American producer places his commodity in a foreign market in his own right, by means of representatives thoroughly qualified to represent and as thoroughly identified with his interests, the whole aspect changes.

The successful introduction of American manufactures by this means in many foreign markets is well known, and the advantages of a foreign trade so established to the American manufacturer have been vividly illustrated during recent years of domestic depression and industrial uncertainty. That which has been done in this direction will exert a powerful influence on the future of American export trade. The most recent development is in the bicycle trade. American manufacturers having created facilities that outrun domestic demand, great as that is, are seeking new outlets in Europe, and are doing it in their own name, thus holding at their command all the forces that make for the building up of a demand for their machines. This is rapidly making the American bicycle a factor in calculations for trade in their home market by foreign makers. In speaking of this bicycle invasion the London *Ironmonger* says:

"The continued arrival of fresh American firms on this side of the Atlantic, all bent on obtaining a share of the English trade, has brought home to the minds of those who were at first inclined to be skeptical the importance of the American invasion, till the subject has lately become one of the leading topics of conversation in the trade. It is desirable that all who are connected with the trade, whether as makers or dealers, should realize the position of affairs, and remember that the Americans having found their efforts this

season to some extent crowned with success are not likely to relax their endeavors to build up a large trade in this country."

Every success won by an American in a foreign market makes success there for another American easier. The advantages gained to date will give impetus and direction to future efforts. The increasing volume of American commodities that enter international commerce is destined to change the commercial map of the world. The day has arrived when a well-considered American policy for exploiting the sale of American manufactures in every foreign market can be formulated and carried into successful operation. It will not be built upon antagonisms or deceptions, but will be girded, braced and bound into a massive structure from which all weakness has been eliminated or guarded against through rightly bringing into co-operation the mutual interest of the American producer and the foreign buyer. Commerce is an exchange for mutual benefit. Piracy is seizing an advantage without giving a benefit. It is the mission of THE AMERICAN EXPORTER to develop American commerce.

ENGLISH VS. AMERICAN TOOLS—FILES.

THE London *Ironmonger* is prosecuting a series of investigations or inquiries as to the causes and the cure for the growth of the American tool trade in English markets. In a recent number the subject of files was under consideration. The customary experience in such undertakings has been repeated. Some disclaim the seriousness of the competition by saying that "any good Sheffield house can compete in point of price and infinitely surpass as regards quality and endurance" the American file. Others unwittingly belittle the intelligence of English workingmen who are file users and the trade instinct of English ironmongers by declaring they have "a predilection for cheap rather than for good files."

Another takes issue with the idea that the competition of American files in England is a "myth" or that the American product in this line is of the "cheap and nasty" order. He cautions English manufacturers against the danger of underestimating the power of their American rivals, and emphasizes his statement by reference to the time when Sheffield had a monopoly in saws, and asks: "Who would now be bold enough to designate Disston's saws as 'cheap and nasty' and their competition of a class that need not be seriously regarded?" And he says further: "Where, also, is the manufacturer of reaper sections who can turn out a better section than a 'Wood'?"

The consensus of opinion appears to be that the competition is due to price and quality. The only cure noticed is a suggestion "in favor of an import duty being imposed upon American files." It is not shown by how much such a duty should increase the price of files to English users.

Some light may be thrown on this discussion by considering the fate of English files in American markets. Though there are people in this country who still use hand-cut files, their number is almost infinitesimal in comparison with that of the believers in the efficacy of good machine-cut files. The success of the machine-cut file is not wholly due to price. The advantage of price has undoubtedly secured for them many first trials which might not have been so easily accorded otherwise, but it is important to observe that to a file user price is not the main consideration. He must have a good tool to do his work well. A few cents' difference in price will not induce him to change a good tool for a poor one. It is quality first and price afterwards. With this fact in mind it is interesting to note that English files have been driven out of the American market. If Sheffield files "surpassed infinitely American files as regards quality and endurance" they would still be sold here in large quantities; for American mechanics always want the best implements to work with, even if the best costs more money. We believe English mechanics are equally intelligent and want the best tools, and that they would not use American files if English ones were "infinitely superior." It is unreasonable to be asked to believe that a large number of English workmen would let a slight difference in the cost of their files overcome their natural prejudice for

English goods, added to the alleged superiority of those goods. The preference of both American and English mechanics for American files, attested by the loss of the American and the impairment of the English market for the sale of English files, is a practical certificate that good American files are at least equal in quality and in many cases superior to the Sheffield products, and it is futile for English makers to make such statements as appear in the *Ironmonger*. Their views can be explained only by the supposition that they keenly feel the inroads made into their trade by American files and have allowed their judgment to succumb to anger.

American files and rasps are being sold in large quantities in Great Britain, and their popularity is rapidly increasing there and in many other countries. It is but natural that this should be so. American mechanics are the best in the world and wide awake to all improvements in processes and products. Filemakers in this country have been alert to progress, and the best American files are to-day unsurpassed in cutting and wearing qualities, design and finish. When advantage in price is added to these considerations the destination of orders is not a question open to doubt.

THE PROPHET AND INVENTOR, NIKOLA TESLA.

WHILE the mind can go backward over the pages of history and form a fairly accurate conception of the changes that have occurred within the nineteenth century in the domain of industry, commerce and finance, it cannot lift the veil and penetrate the future to tell us what are to be the new developments in these departments of human energy within the twentieth century. When one measures the importance of what has been accomplished during this century, then realizes that all this but supplies momentum for future work, and attempts to form a conception of what will be accomplished during the next one hundred years, he will find his powers of imagination unequal to the task. Of only one thing can he feel certain. That is, things which now seem most impossible of accomplishment are destined to become matters of such ordinary daily experience as to cease to excite wonder or comment, as the telegraph and telephone have become with us.

It would be both instructive and amusing if one could step back to the year 1800 and have a chat with the practical business men of that day and tell them what the practical business men in the year 1900 would be doing and how they would accomplish their purposes with the aid of mechanical devices. How much credence could the men of 1800 be expected to give to the prophet who would tell them nothing but what we know the men of 1900 will actually be doing? This observation should tend to cause us to look with little skepticism upon what might otherwise appear to us but unsubstantial visions when great inventors appear to become prophetic in telling what may be done.

The latest announcement by Mr. Nikola Tesla is that he expects to make it possible for us to see the face of a person as well as to hear his voice who may be a thousand miles away. When we consider the wonders of the electrical transmission of intelligence by mechanical sound, the transmission of the actual voice, the storing up and releasing of sound at pleasure, the wonders of the microphone and of the megaphone, the marvels of the Roentgen ray, the electrical production and transmission of power and the generation of light, we are in no position to dispute the possibility of the electrical transmission of vision. The things that Mr. Tesla has brought within his vision and ticketed as possible are more than all the world brought forth in his line of investigation during the first half of the nineteenth century. This fact, and he is but one of many, adds still greater weight to the question, What is to be brought forth in the future?

Another point must be considered. Owing to the rapid and universal transmission of intelligence, a new idea struck off by any minds finds fruitful soil in thousands of receptive and appreciative minds scattered all over the world. This helps to bring every new discovery into instant use. To illustrate the intellectual momentum of the present compared with the past it is only necessary to draw attention to the difference in the reception accorded to Benjamin

Franklin's announcement of his experiments with a kite in drawing electricity from the clouds and Prof. Roentgen's announcement of his experiments with the X-rays.

To live in the surroundings of the present day and to be a leading prophet and inventor in his chosen field is ample distinction for any man. Beyond this there is nothing of higher honor for Nikola Tesla, unless it be to realize the sincere wish of all who know him that he live and prosper to fulfill all of his own prophecies.

A VISIT TO THE UNITED STATES PROFITABLE.

WE have frequently urged upon foreign importers the importance of visiting the United States for commercial reasons. There can be no doubt that any person engaged in importing manufactured articles will find, by personally inspecting the products of American factories, many articles that he can handle with profit of which he has not before heard. By conferring personally with American manufacturers at their factories, where they can discuss all questions pertaining to material used, processes of manufacture and the care and use of the article, foreigners can obtain and give many valuable suggestions. The place to exhibit an article for sale is in the country where it is to be used, but the place to inspect an article for the purpose of learning how it is made, why it is made in its particular way and how it may be better adapted for the use for which it is intended is at the factory. Exchange visits, manufacturers visiting customers and customers visiting manufacturers, can result only in mutual benefit.

It is not alone in a commercial sense or to those engaged in commerce that a visit to the United States is profitable. Recently Lord Chief Justice Russell, of England, came to the United States to attend the annual meeting of the American Bar Association. In speaking of the advantages of a visit to the United States he said when he had gone to our mountains and lakes he had been deeply impressed by their grandeur and had felt how minute a mere mortal was. He advised all Englishmen who seemed likely to be carried away by self-conceit to visit the United States.

COMMERCIAL MUSEUMS.

THE influence of commercial museums in promoting trade between countries has been made effective in several European trade centres, and the idea is now taking root in this country. The uses of such institutions, however, depend almost entirely upon the trade sense of those who manage them.

The Philadelphia Museum has undertaken a threefold work. 1. To collect from all countries exhibits of natural products that may be consumed in this country either in supplying the wants of the people or as material for manufacturing purposes. Collateral to this exhibit are descriptions and exhibits of the method of preparing or conveying to market these natural products in the country of origin.

This feature of the exhibit is based on correct ideas of trade. It is really an exhibit by foreign countries in the market where they seek sales. It enables American manufacturers to study these products, to see how they may be utilized in existing manufacturing processes, to devise new machinery and methods of treatment for their manufacture, and to create improved machinery and facilities for treating and handling the products in their native countries.

2. To collect from all countries an exhibit of their manufactures.

3. To collect an exhibit from each country of its manufactured imports.

These exhibits illustrate the habits, tastes and industrial development of the people from which they come, and in that aspect are serviceable. But a mistake is being made in suggesting to American manufacturers that these articles must be imitated in order to enable American manufacturers to secure trade in the countries from which they emanate. This is not true. They will undoubtedly give many quick-witted American manufacturers or mechanics valuable hints as to what he can make that will find sale in foreign

countries, but what they make will be of American design; it will not be imitations. To illustrate, take the subject of shoes. If the museum exhibits a full line of the footwear of all nations should Americans commence the manufacture of all styles of the grotesque samples? They will see the superiority of American styles or how they can make a style that will be an improvement over the sample and will then take steps to make the American shoe fashionable in the country where they want trade. Again, take the subject of tools, cutlery, etc.; there is no question regarding the superiority of the American make over the products of other countries, and especially over the class of goods in this line manufactured in Europe for export. Americans cannot gain trade supremacy by imitating these things, but by driving the inferior tools out of all markets with superior goods.

The growing intelligence of the world finds practical expression in the improved tools, utensils, machinery, facilities for transportation of persons, property and intelligence; food, clothing and furniture; works of art, articles for entertainment and instruction. The true function for a manufacturer is to assist in inducing progress by improving his products, not to fetter the expanding aspirations of any people for better things by attempting to perpetuate beyond their day the things used by a past generation. Wherever American manufacturers have won a commercial success it has been due to the superiority of distinctive American products, not by cunning imitations.

SATISFACTORY PERFORMANCE BY NEW ICAN-BUILT SHIPS.

WITHIN the last year two ships built for the American Line by the Cramp Shipbuilding Company, of Philadelphia, have been placed in service, the St. Paul and St. Louis. These ships were intended to be the peers of the New York and Paris, that were transferred to the American flag some two or three years ago, upon condition that the company should contract for the building, in American shipyards, of two ships of equal merit.

The speed record of the St. Paul, which was first put in service, made from Southampton to New York, was 6 days, 5 hours and 32 minutes.

The St. Louis recently made a record for itself of 6 days, 2 hours and 24 minutes. This run was over a course of 3,065 miles, which was traversed at an average speed of about 21 knots an hour—20.867 knots, to be exact. For 21 hours the passage was through a fog during which it was frequently necessary to slow the engines. The highest run for one day was 530 knots, an average of 22.083 per hour. Throughout the voyage the winds refrained from troubling and the seas were at peace. The luxury of ocean travel seems to have reached a dawn of perfection difficult to pass.

LENGTH OF THE JAPANESE FOOT.

A READER of THE AMERICAN EXPORTER, Mr. H. E. Amoone, writes us from Kobe, Japan, to say that we are in error in stating that a Japanese foot—shaku—is equal to 10 American inches. He says, "The difference between a Japanese foot and an American or English foot is very, very trifling," but fails to state what the difference is. We are glad to receive such corrections, as they not only help to keep us right but show how widely and carefully THE AMERICAN EXPORTER is read. A correction, to be complete, however, should state the exact change required to make the language used right.

JAPANESE "SHAKU" IS EQUAL TO AMERICAN "FOOT."

The following letter has been received by us from one of our readers, dated Kobe, Japan, June 9, 1896:

To the editor of THE AMERICAN EXPORTER:

Let me draw your attention to the fact that the difference between a Japanese foot and an American or English foot is very, very trifling, and your statement that a Japanese shaku, *i. e.* foot, is equal to 10 American inches is incorrect, and should be 12 American inches.

Yours truly,

H. E. AMOONE.

FRAUDULENT PRACTICES.

TRADE deceptions have existed since trade began. To suppose that they can be wholly eliminated would be a chimera. But every person engaged in trade knows the value of a reputation for trustworthiness, and they also know the value of being located in a manufacturing centre, a market, a nation the general reputation of which is one of fair dealing and undoubted reliability.

Fraudulent practices are not only a wrong perpetrated upon buyers; they are an injury to the business community and the branch of business that permits them. Such practices are always indulged in for the sake of a profit. As a permanent and growing business cannot be founded on deception the effort to grasp a profit through deception is a deliberate sacrifice of future benefits for present gains.

A wrong trade policy is being urged upon California fruit growers and winemakers. It has been demonstrated that many of these products can be sold with advantage in European countries and France itself, and French dealers are now demanding California prunes and fruit put up in packages identical with French packing, all marking to be French, so no buyer can detect the fact that the fruit is of American origin. This will enable them to substitute American for French fruit in their trade without change of price, as a first result giving them an opportunity to supply a deficiency in a French crop without giving their customers any benefit of a lower price which might be made. This they represent to the American fruit grower is the way to make a market for American fruit in France. We enter our protest against this policy and for the following reasons:

1. It deprives the American grower of the value of the prestige his products may gain by having consumers advised of the source of origin. At the outset there is a natural preference among Frenchmen for French fruits and wines, but when they learn, through use, that American fruits and wines are better at same price, and possibly have some characteristics which render them preferable at any price, the trade-determining force of preference will be turned in favor of American products, and they can be readily sold under their own self-respecting brands.

2. The policy of deception recommended places the American grower absolutely at the mercy of the French importer. When the trade of a season is closed the American is as unknown and as helpless to obtain trade in his own right as though not a pound of his fruit had been exported. Taking advantage of this circumstance the French importer can dictate terms for the next season, with a full knowledge of the fact that the American products have no standing as such in French markets. Trade independence for Americans is not possible under these conditions.

The true policy for Americans is to pack their fruits in cases similar to those used by the French, marking net weights in kilos and making prices per kilo so buyers will have no trouble in understanding what they are offered and in making comparisons with native products, but the American brand should be conspicuous, giving the name of place of origin and, if practicable, the name of the grower. In this way appeal can be made directly to the intelligence of the buyer. If the American product is sufficiently good to permit its being sold under a French label without detection, it is sufficiently good to be sold under its own label. When the French buyer learns from use that American products are as good as native and better value, price for price, his prejudice will entirely disappear and his preferences will be given in accordance with his tastes and his advantage. Every pound of American fruit sold under American labels will open the way for a demand for other pounds, and the American growers will have a hold on the market that will place them in a position to make trade arrangements with those who will serve them well.

The principles involved in this sound trade policy will apply with equal force to every American product, wherever sold. American commercial supremacy can come only through making the label "American" a mark of preference in every market in the world. To this all American producers can contribute.

THE DESTINATION OF AMERICAN EXPORTS.

MANY valuable lessons may be learned by studying the course of trade as illustrated by American exports. For the last fiscal year 47 per cent. of the total exports went to the United Kingdom and 12 per cent. to British colonies. This accounts for 59 per cent. of the whole. This shows that the leading industrial and commercial States find an advantage in buying American products and it should be the most practical of all lessons to teach other nations where is to be found the source of best supply on the most advantageous terms.

Looking more closely into details it will be seen that there is a decided tendency on the part of British colonies to increase their purchases of American commodities. In the last year Canada bought \$7,000,000 more than it did the year before. British Australasia increased from \$9,014,000 in 1895 to \$12,748,000 in 1896, an increase of 41 per cent.; and British Africa from \$5,203,000 in 1894 to \$11,200,000 in 1896, an increase of 116 per cent. The purchases of American exports last year by British Africa were nearly four times as large as they were in 1891. The most important items of this trade in 1895 were iron and steel and their manufactures, rum, illuminating oil, agricultural implements and cotton manufactures. The value of cotton fabrics jumped from \$79,306 in 1894 to \$207,045 in 1895.

The English system of colonization is developed and sustained primarily to make homes for English people and a market for English products. The natural bent, the educational bias, the influence of the Government, the facilities for transportation, the advantages of financial credits and exchange and the sentiment of patriotism in English colonies are all in favor of trade with the United Kingdom as against the rest of the world. The sellers of American products are able to offer, in quality and price, inducements that cannot be duplicated elsewhere or they could not secure the orders of these people—the best-posted buyers in the world—and overcome all the nationalistic and commercial conditions that tend so powerfully to draw trade to the mother country.

This fact should serve to satisfy the buyers of all other countries, whenever they go abroad to make purchases, that they can never be sure they have established the trade relations that will be best for themselves and their customers until they have carefully investigated the possibilities of the American market. This is most emphatically true when the supplies they require are similar to those which the United States is furnishing to the United Kingdom and its colonies.

The fundamental consideration that gives direction to a buyer's order is the preponderance of advantage offered him. This consideration is sufficiently powerful to overcome all barriers, artificial or natural, and cut a channel for trade through every tradition, custom, prejudice and restraint of nationality or government. The English system has been to open markets by force of arms; the American system is to possess them by force of commercial advantage. All buyers know which is the best system.

PERSONAL REPRESENTATION IN FOREIGN COUNTRIES.

UNITED STATES CONSUL WARNER, of Cologne, illustrates his argument in favor of the personal representation of American manufacturers in foreign markets by citing the case of a firm who wished to introduce into Germany a very useful and practical patented machine. After having tried in vain to effect the introduction through sending out circulars, an agent was sent to Germany who thoroughly understood the construction and working of the machine. This agent has now been in the country for about two years and reports that he has done a business during the past year of about \$200,000 with this one machine alone.

While this lesson is of value to American manufacturers, it is of greater value to foreign importers. We are continually urging foreigners to come to America, go through its workshops, find those things that can be of use to the people of their own country,

become perfectly familiar with all points of advantage, construction, installation, operation and repair, so that they are fitted to represent them intelligently, and then return to their country prepared to build up a business which will be essentially their own, so far as the sales in their market are concerned.

The buyers of any country can be influenced more easily by their own countrymen than by foreigners, provided the native representative is fully competent to explain all the advantages of the article he attempts to sell, and if it be a machine to set it up, operate it, keep it in repair and teach those who buy it how it may be made to perform its labor in the most efficient manner. Young men seeking business relations cannot do a better thing for themselves than to thoroughly fit themselves to become the personal representatives in their own country of some well-established American manufacturers. While the opportunities for entering business in home establishments are overcrowded, there are a large number of American manufacturers without a personal representative in numberless foreign markets where their products can find a growing demand if properly introduced and represented. No longer time will be required for a young man to establish himself in this way than to build up a position for himself in a home establishment. Furthermore, he can more easily find an opportunity and his reward will be greater.

AMERICAN MINT MACHINERY FOR CHINA.

THE Chinese Government is preparing to furnish its people with more coined money. It has recently placed an order with a manufacturing company of Bridgeton, N. J., U. S. A., for mint machinery, embracing five coining presses with attachments and dies; two punching presses with feed attachments and dies for cutting the blanks and a lot of extra dies and other special machinery. It will thus be seen that while Li Hung Chang has been inspecting the shipyards and arsenals of Europe without placing orders some of his compeers have recognized the superiority of American machinery and workmanship by placing this order for a modest mint plant.

THAT COMMISSION PIRATE AGAIN.

SOME time ago we had occasion to caution foreign exporters against "Commission Pirates" who deliberately substituted the goods of one manufacturer for those of the manufacturer whose goods were ordered for reasons not in the interest of the foreign buyer.

Now comes a complaint in the *American Machinist* against export commission agents who defraud their customers and injure American export trade by filling orders with inferior goods.

An instance is given, by way of illustration, of an order for leather belting which was filled with belting of an inferior quality that so displeased the foreign buyer as to cause him to send all subsequent orders to England and ruined the American belting trade in the market where he was located.

In transactions of this kind, where the buyer must leave much to the discretion of his agent, it is quite impossible to furnish absolute safeguards against discreditable dealing. The thing foreign importers can most easily do is to study the advertising pages of THE AMERICAN EXPORTER and obtain information as to quality and prices direct from manufacturers and then order the identical thing wanted, leaving the buyer no right to deviate from the order.

Manufacturers who are seeking to build up an export trade are usually sufficiently sagacious to know that the goods sent to a far-away customer must be selected with the greatest care to make sure that they will give satisfaction, as upon that future orders must depend. If a foreign customer has reason to be dissatisfied it is far more difficult to conciliate him than a nearby customer, with whom an exchange may be effected, thus removing the cause of dissatisfaction. In filling foreign orders the stability of trade demands that none but the best goods that can be afforded for the price to be paid should be furnished. An export commission agent might better

shade his rightful commission a little in order to send a superior article rather than seek to enlarge his commission by sending goods of inferior quality. One policy will tend to increase trade, which produces commissions; the other to destroy trade, and with it all chance to earn a commission. Honest dealing lies at the foundation of all commerce. It is, if such a thing were possible, more essential to stability in the business of an export commission agent than any other, as is attested by the numerous firms that are so founded.

THE PARIS EXPOSITION OF 1900.

THE place to exhibit goods is in the market where they are to be sold. This statement accords so perfectly with sound commercial sense it may be considered axiomatic. The Paris Exposition of 1900 will not only afford American manufacturers an opportunity to exhibit their products in France, where they should find an expanding market, but as Paris on this occasion will become an epitome of the world they can there exhibit their goods, tools, machinery and devices to the buyers of the world.

There are many distinctively American products well adapted to the needs of foreign countries that are as yet unknown beyond the borders of the great Republic. Here these labor-saving devices and types of labor-performing machinery are considered indispensable, and they will become so in other countries where properly introduced, as have American typewriters, sewing machines and watches.

While the time of the Exposition seems far distant the time to prepare for it is none too long. We wish to arouse not only American but a world-wide interest in the undertaking.

CLOSE-FITTING ECONOMY.

INDUSTRIAL operations in the American Southern States furnish many instructive illustrations of the superior economy of well-paid, intelligent, free labor working with the latest-improved machinery and tools over poorly paid—or not paid at all—ignorant slave labor working with crude implements.

All labor pertaining to the raising and marketing of the cotton crop has intense interest for Southern planters. The stimulus of free industry has induced the study of every operation resulting in an improvement of some kind and a corresponding saving. Great advances have been made in ginning, compressing and baling. A few years back when the flat tie was introduced it was thought that nothing further need be desired in that direction, but now comes a wire tie that can be placed on the bale in less time and costs 6 cents per bale less than the flat ties. An invention to save 6 cents per bale is a close-fitting economy unheard of in slavery days, and illustrates the radical difference in the industrial system between the old and new South.

THE FIRST AMERICAN OUTDOOR STATUE IN EUROPE.

THE fitness of things is recognized in the fact that the first statue by an American artist, permission for the erection of which has been granted in Europe is that of George Washington, the Commander-in-Chief of the American forces during the war for independence, and the first President of the American Republic.

A group of American women in Paris formed themselves into a Washington Memorial Association, raised the necessary funds, commissioned the American artist Mr. Daniel Chester French to create the statue and secured the consent of the municipal authorities of Paris to erect it in the French capital on Rue Washington.

It is fitting that the first statue by an American artist should be that of George Washington, whom Americans delight in honoring as "first in war, first in peace, and first in the hearts of his countrymen." It is also most fitting that this statue should be erected in France, in Paris, from whence came such helpful aid to the cause of American independence.

THE SUEZ CANAL TRAFFIC.

THE influence of the Suez Canal upon commerce demands attention, not only because of the grand achievement of the canal builders, but because of its influence upon the commerce of Australia and the Orient. The growth of traffic through the canal has reached a point where even a small per cent. of gain means much. This will be appreciated by a glance at the statistics of traffic.

Year.	Vessels.	Net Tonnage.
1870	486	436,609
1880	2,026	3,057,421
1895	3,434	8,448,383
1891	4,207	8,698,777

It will be seen that 1891 is the red-letter year. It is reported, however, that 1896 promises to exceed it.

What the Suez Canal means to commerce may be understood by an illustration from the Australian trade. It is said to be quite a common thing for a steamship which arrives at Sydney or Melbourne at the same time with a sailing vessel to unload, return to England and dock again at the Australian port before the clipper has secured a new cargo. It is claimed that there are cases where a steamship has duplicated the feat while the old-timer was waiting for patronage.

The "old-timer" waiting for a cargo while the steamer makes a round trip is typical of those who keep their old machinery and tools in use and then attempt to compete with those who move with the procession and keep everything up to date. The old-timer cannot do it.

AMERICAN INVENTION AND COAL DUMPS.

INVENTORS are usually regarded as a set of visionary persons who cannot be held to practical work. It must be conceded, however, that in the main their object is a practical purpose and generally one of high value.

A coal dump has long been considered an uninviting and worthless accumulation of refuse material. Keen observers, however, have noticed that improvements in preparing coal for market and in its final consumption have made a great change in the character of the refuse, clearly disclosing the fact that much of the material that formerly went into the dump is really marketable coal. This observation has set numerous inventors at work to devise a means for preparing this "culm" for market and for burning it. We are informed by Mr. Edward H. Williams, Jr., in *The Engineering Magazine*, that the eager search for the means of utilizing the energy of coal dumps has resulted in the issue of more than 50 patents for burning culm in its ordinary state, 30 for reducing it to an impalpable powder and burning it in that state and more than 100 for combining with some substance to form brignetts, etc.

As a result of this effort old coal dumps are now in active demand and leases are being made for their reworking. This shows that one generally can find wealth in what a former generation wasted and demonstrates the benefit of invention.

ECONOMY IN PUMPING WATER FOR CITIES FROM DEEP WELLS.

PUMPING water is a very old and is ordinarily considered a very simple art. One would suppose that here, if it is ever to be anywhere, the development of improved methods would by this time have reached the limit of possible betterment, but it appears such is not the case.

The town of Bloomington, Ill., U. S. A., draws its water supply through six and eight inch pipes from wells 145 feet deep. Recently, after careful experiment, it has adopted a system of lifting the water by means of compressed air introduced into the water pipe at the bottom of the well. The superintendent of the water works and the city engineer state that with the Corliss compressor water can be raised by this system for one-half what it formerly cost for pumping. Such an economy is worthy the attention of the municipal officers of all towns drawing water from deep wells.

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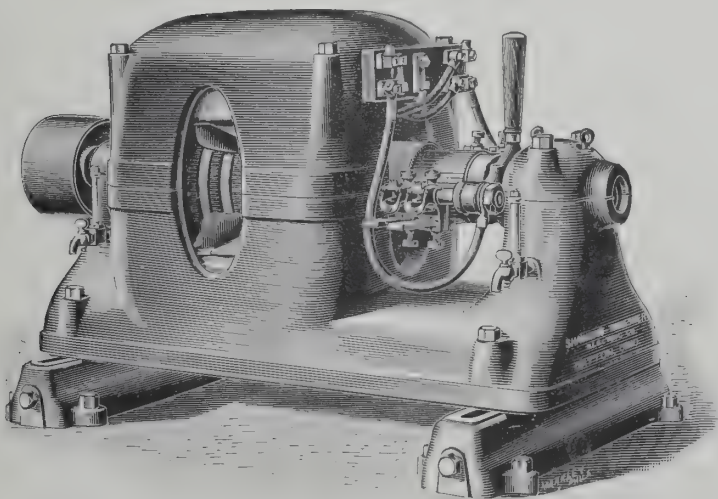
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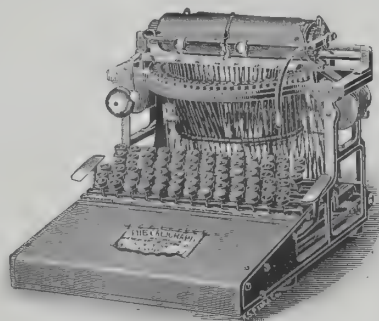
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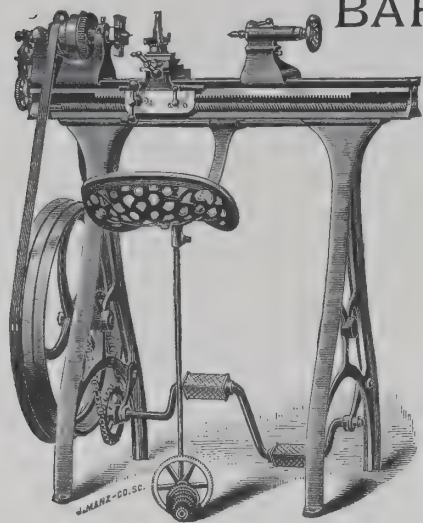
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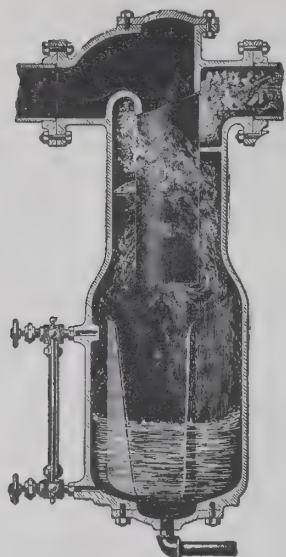
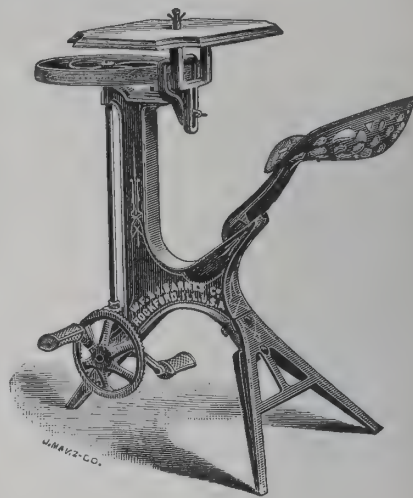
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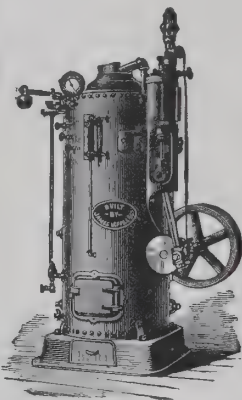
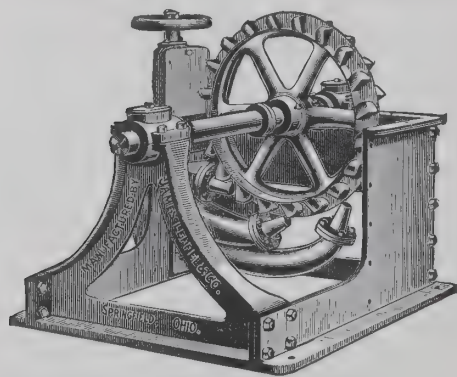
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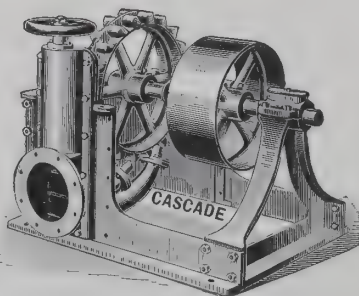
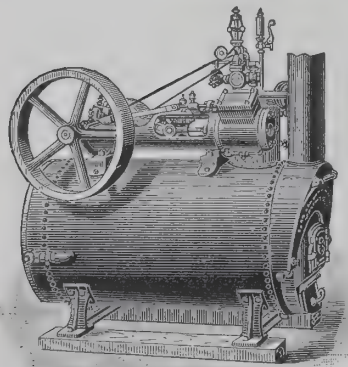
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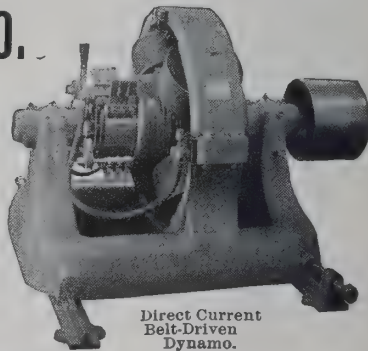
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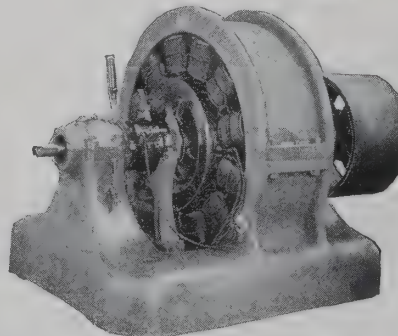
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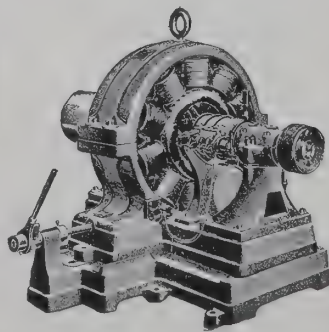


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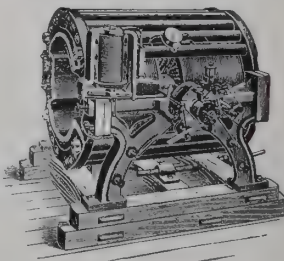
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America's Industrial March.

LEVASSEUR, a member of the French Institute, and an authority on such subjects, has been making a study of the industrial situation in the United States, and is filled with wonder at the fertility of production here. In an article in the *Revue Politique et l'arlementaire* he speaks of the prodigious proportions which the tendency of modern industry to concentration has taken in this country. Not alone is the small workshop disappearing, but the small and even the medium sized factory are following it. In the iron industries there were in 1880, 1,005 establishments, producing \$69,000,000, while in 1890, 615 establishments produced an output of \$431,000,000. In 1880, 2,689 woolen factories had an average output of \$98,000, against an average production of \$136,000 for 2,489 factories in 1890. In 1840 there were 1,240 cotton mills, producing an average of \$196,000; but in 1890 the number of mills had fallen to 905, and the average production had increased to \$293,000.

By the side of this increase in production M. Levasseur marvels at the diminution in the number of hands employed, and the substitution of machinery for man. The rolling mills of the Illinois Steel Company require 3,000 horse power, but only a very small number of workmen. In the Pillsbury Mills at Minneapolis an insignificant number of workmen operate machinery capable of producing flour for all the population of Paris. The Armour elevator at Chicago has a force of only 75 or 100 persons. Nevertheless it has a capacity of 6,000,000 bushels, weighs and handles the grain, loads a car in a minute and a half, and puts 100,000 bushels of grain into a steamship's hold without attracting attention. In the Pabst brewery at Milwaukee is a machine which corks, wires, and caps 16,200 bottles a day automatically. M. Levasseur dilates upon the wonders of the Armour packing-house.

He describes in detail the development of the shoe industry in Massachusetts, to illustrate the process through which American industry is passing. Until 1850 shoes were for the most part made in the Bay State by farmers working at home at seasons when farm work was slack. Little by little manufactories were established, and small workshops were replaced by big ones as machinery was improved, until now everything is done by machines which are marvelous in their variety, rapidity and skill. Here the specialization of labor has been developed to the highest degree. One factory, employing 233 hands, produces 2,100 pairs of women's shoes a day, or on an average of about nine for each hand. No workman makes a complete pair of shoes; indeed, there is hardly room for a workman who is a complete master of his art. The important thing is to go through one movement rapidly. Each detail in making a shoe is done separately, even to sewing on the buttons. Thus a pair of shoes passes through 53 hands in the making.

In all lines, machinery in the United States has shown the same improvement. In 1876 a certain mill owner exhibited with pride a woman who operated seven looms at once; in 1893, in the same factory, there was a whole room full of women each of whom operated eight looms. Typesetting machines do the work of three men. The French workmen who were sent as delegates to the World's Fair at Chicago were unanimous in doing homage to the industrial genius of Americans. Manufacturers, they said in their report, are unceasingly replacing old machinery by improved types. Although the McCormick reaper works in Chicago were the oldest establishment of the kind in the United States, they did not find there a single machine out of date. As soon as a machine begins to be damaged, or can be replaced by one giving better results, a manufacturer does not hesitate to send it to the junk shop. "The rapidity of the machines is astonishing," the delegates concluded, "the specialization seems sometimes to border on the marvelous." Some of them declared that if France, without a protective tariff, had to compete with the United States, it would be necessary to discard all existing machinery and put in new to be on anything like equal terms.

At the same time M. Levasseur questions whether in view of the floods of products which certain industries put upon the market, some of them are not approaching the point of overproduction, for the time being at least.

"I read," he says, "in a report on the Chicago Exposition, that there were produced by American hat factories 972,375 dozens of felt hats ready to be worn, and 74,000 dozens of hats to be finished (hats for women); that is, 12,500,000 felt hats, to which must be added the silk hats, the straw hats, of which the consumption is considerable, part of the hats for women, and all this to supply a population which was in 1893 about 65,000,000. I read in 'Industrial Evolution,' by Carroll D. Wright, that there were manufactured in 1890, 179,500,000

pairs of shoes, about three pairs for each inhabitant. A limited number of workmen (3,592 for felt hats, in 1890, and 194,000 for the shoes) sufficed to supply hats and shoes to the whole population. There are certainly industries in which the progress which increases the facility of manufacture exceeds the growth of the consumption. Nevertheless, such is the validity, the energy of the American industry, that it is certain to find new fields when necessary. Thus it is that the number of American workmen, notwithstanding the substitution of machines for hand labor, is increasing continually. From 1860 to 1890, while the population of the United States was doubling, the number of persons employed in industries was almost tripled, while the mechanical force, measured in horse power, was quadrupled."

In conclusion, M. Levasseur warns Europe in general, and France in particular, that it will be necessary to wake up to avoid being invaded by American industry, which, after having freed itself from European markets, tends to invade Europe in turn.

Machine-Made Art Molding.

I RECENTLY visited a large factory whose exclusive product is art moldings produced by means of machinery, says a correspondent of the *Timberman*. One has but to examine the hundreds of patterns of reproductions of classic designs in moldings to be convinced of the wonderful possibilities opened up for artistic inside house finish. It renders possible the ornate wood finishing of a house in a manner that, were it hand work, the cost would be prohibitory to any but the very rich. Here I found produced, in all sizes, with lines as sharp as hand work and with absolute regularity and smoothness, the beautiful echinus (the egg and dart pattern), the ever handsome crenelated pattern of the Normans, the ornate guilloche of the French, and almost every other classic form of moldings mentionable. The machines even produce a billet mold with accuracy. Moldings can be machined to any desired depth, and the limitation of the work only stops at designs of extreme complication, where the cost of reproduction would approximate hand work. As now produced, this machine-made carving molding is sold at a price of about 10 per cent. of the cost of hand work. Besides interior finish the material is also adapted to cornices, picture hanging mold, the finish for frieze, dado, etc. The woods used are limitless—oak, maple, birch, walnut, mahogany, cherry, sycamore, ash, white and yellow pine, gum and cypress—harder woods being in preference for absolutely smooth results.

The special patented machines making these moldings are as interesting as they are exclusive. Many attempts have been made to mechanically produce carved molding, but it was left for the inventor of this machine to accomplish the result in an artistic and commercially satisfactory manner. The result was only just accomplished in 1893, and the modest display at the World's Fair, relegated to the forestry instead of fine arts display, was doubtless not noticed by one visitor in a thousand. The display, however, received the highest award at the hands of the commissioners.

The molding machines are a modified form of iron planers, run at a high speed. Set in the arch which ordinarily carries the iron-cutting tool is placed a reciprocating gate to which is attached the mold-cutting knives. These knives resemble an ordinary molding knife, only that they are slightly bevelled from the back as well. The gate is actuated through a lever by a cam on the driving shaft. This regulates the depth of the cut. The length of the convolutions or what not is controlled by the speed of the planer bed, regulated by interchangeable gearing. The material to be carved is in the form of plain molding as it comes from the sticker. These strips are locked on the bed of the planer much in the way a type form is locked on the bed of a cylinder press. The bed is then run back and forth, one side of the pattern being cut or rather scraped in one direction, and the other side as the bed moves in the opposite direction. The gate is gradually dropped as the bed rushes back and forth until the requisite depth of cut is attained. One set of knives produces many beautiful moldings, but in others the designs are only fully worked out by cutting a part at a time and then substituting other knives.

For this low priced art product of modern genius the New England demand is the heaviest, and next to that is the English export trade.

—Two thousand tons of Birmingham pig iron were recently shipped to Europe. The iron went by way of Mobile, at which place it was loaded in the steamer. Sixty-four cars were required to take it to Mobile from the furnace and it represented 20 days' work for a 200-ton furnace.

American Shoe Machinery in Germany.

F. F. STANLEY, of the Stanley Manufacturing Company, Boston, Mass., is home from a business trip through Europe. Mr. Stanley spent most of his time while abroad in Germany. His company has large interests there. Mr. Stanley was the first American shoe machinery builder to appreciate at its real worth the German market for shoe machinery. Some years ago he established a house at Frankfurt. At that time there was not much shoe machinery used in Germany. The manufacturers did not feel the necessity of its use. So far as they did use it the machinery did not show the saving which is realized from it elsewhere. American shoe machinery is built to meet the requirements of the American factory and American methods. When placed in factories which are not organized on the American method it fails to show the economies that it ought to show. The German manufacturer found it more expensive to reorganize his factory so as to reap the full benefit from machinery than he did to put in the machinery. Then, too, the process of reorganizing were opposed by his help.

The result of all this was that Mr. Stanley found it necessary to inaugurate, through his house at Frankfurt, a campaign of education. It was slow, tedious and expensive, but now it begins to show good results. Within a few years German shoe manufacturers have learned that their competitors in the United States can actually make shoes cheaper than they can be made anywhere else in the world and that there is nothing to-day but the inactivity of the American manufacturer as a merchant which prevents him from underselling the German in the latter's own country. They have been very ready recently to learn how this can be done. They have been quick to see that it is the result of the superior factory organization of the American, of the better use of machinery and of the greater skill that comes from this use of machinery. As a rule, then, the German manufacturers are now quite ready, quite willing, in fact quite anxious to reorganize their factories on the American plan and to put in American machinery as rapidly as their workmen can be taught to use it.

Mr. Stanley says that he has noticed what others who have recently been in Germany have noticed, and that which has been reported in these columns before, namely: that German shoe manufacturers are much more enterprising in this matter than their English competitors. They are much more receptive, see more readily the advantages that are to be derived from the proper use of the most improved appliances.

It has been reported during the present Summer in Berlin, Germany, that a leading manufacturer of Philadelphia is about to open a large retail store in that city. The goods manufactured by this and several other enterprising American firms are on sale in all of the largest cities in England and Scotland, and they are likewise on sale in Paris. Wherever American shoes have been introduced into Europe their superior quality, low price and improved form have given them quite ready sale.

Candee's Wire-Measuring Machine.

CAPT. WILLARD L. CANDEE, managing director of the Okonite Company, Limited, 253 Broadway, New York City, is the inventor and patentee of a wire measuring machine. In this device the measurement of the material is positively controlled, and a visible registry of the number of inches, feet, yards or other unit is actuated simultaneously with the operation of the rolls between which the material to be measured is forced or drawn. The objects of the machine are, first, to provide rolls for positively measuring the material and means for automatically controlling the rolls; second, to operatively combine with the rolls registering wheels or dials, which will be actuated simultaneously with the movement of the measuring rolls; and, third, to provide means for throwing the registering wheels out of engagement with the measuring rolls to permit the return of the registering wheels to zero when desiring to again commence measuring.

Heretofore, when selling wire, whether bare or insulated, sales have usually been based on the cost of a pound or a fraction thereof; but it has been found to be preferable to sell the wire by the foot or yard. Capt. Candee's device provides at a small cost a simple apparatus for carrying out this process. The machine may also be advantageously used to measure tape, cloth, etc.

Knots Tied by Machinery.

IF inventions continue to multiply at the present rate the day may speedily come when man will have to sit with folded arms while his work, and even his pleasures, are turned out for him by nickel-in-the-slot devices. Science has lately given us a marvel in the shape of a card-counting machine.

Two of the most interesting automata now working within the limits of the United States are those used by the Government for counting and tying postal cards into small bundles. These machines were made in Connecticut, and the two are capable of counting 500,000 cards in 10 hours and wrapping and tying the same in packages of 25 each. In this operation the paper is pulled off a drum by two long "fingers," which come up from below, and another finger dips in a vat of mucilage and applies itself to the wrapping paper in exactly the right spot. Other parts of the machine twine the paper around the pack of cards, and then a "thumb" presses over the spot where the mucilage is and the package is thrown upon a carry belt ready for delivery.

—The German Government has decided to adopt the American idea of the triple screw for warships. The decision is looked upon as a tribute to American skill and ingenuity.

American Rails for Japan.

ANOTHER large order for steel rails is the latest development in the line of direct American export trade to Japan. The order is for 9,000 tons for delivery up to the end of the year, and was placed with the Carnegie Steel Company by Mitsui & Co., of Japan, after inviting bids in England and in this country. While the price paid could not be learned it may be said that the bid of the Carnegie Company was sufficiently below the English market to justify its acceptance in spite of the higher freight rates from this country. The contract calls for 60 pound rails, and they will be shipped from this port. The order is not the result of a special order or of proposed special railroad improvements in Japan. The rails have been bought for the account of the three large Japanese railroads to supply the ordinary requirements incidental to wear and tear.

This is the second large order that has been placed in this country for steel rails on Japanese account, the Illinois Steel Company having filled an order for 10,000 tons a few months ago, and it is expected that the steel-rail business with Japan will develop into a steady and important item of trade. It is expected that the demand in Japan for railroad material will in the near future show a marked increase. While the railroads are not owned by the Government they are in a large measure under the supervision of the Government. The roads at present are narrow gauge, and there has for some time been considerable agitation of the question of changing to the broad gauge on the ground that it will in the long run prove much cheaper to change the gauge before the railroad system of Japan assumes its natural importance and thus requires a much larger outlay to change it.

With a view of deciding whether a change in the gauge shall be made immediately the Japanese Government has sent Mr. Matsumoto to this country to study the matter thoroughly. Mr. Matsumoto is the chief of the Government railroad inspectors, and is expected here next week. He will visit all the locomotive builders of the country and prepare an extensive report on the subject. There seems little doubt that the broad gauge will eventually be adopted, and the only objection to a change at the present time is that of expense.

It is understood that competitive bids are being sought for locomotives from English and American builders.

The fact that Mitsui & Co. have opened an office in New York is in itself regarded as an important factor in Japanese trade with this country. This house is one of the largest, if not the largest, in Japan. It has branch houses at Tokio, Yokohama, Osaka, Kobe, Hiogo, Shimonoseki, Nagasaki, Kuchinotsu, Hakodate, Otaru, London, Shanghai, Tientsin, New Chwang, Hong Kong, Singapore and Bombay. Mr. Twahark, of the company, was conversed with yesterday regarding the opportunities in Japan for American exports. "There is," he said, "a good demand for American raw cotton, and this demand is bound to increase, as American cotton is mixed with that of China and India. Last year Japan imported 55,000 bales from America, and will this year probably take more. Japanese spinning mills have about 1,000,000 spindles. They are not all working as yet, but will be by the end of the year. Thus far Japan manufacturers have confined their production to the local demand, but their next step is to export to China."

When questioned regarding the alleged movement to manufacture and export bicycles from Japan to this country Mr. Twahark said: "I don't believe there is the slightest basis for the statement. We could not build good bicycles for less than 100 yen (about \$50), and they would not compare with the \$40 wheels sold here. The fact that we ship bicycles to Japan would almost seem to prove that they cannot be shipped at a profit the other way."—*New York Journal of Commerce*, August 14, 1896

Shipping Machinery to Germany and Austria.

THE Brown Hoisting and Conveying Machine Company, of Cleveland, O., have just received an order from Fried Krupp, at Essen, Germany, for a complete hoisting and conveying plant for their blast furnace at Rheinhäusen.

This plant consists of three standard Brown overhead bridge tramways, to be operated by electricity, each machine having independent winding drums and electric motors. There will be three Elwell-Parker motors used of about 60 horse-power each. The entire machine is to be in operation during the early part of 1897.

The company has also sold for shipment to Austria three of Brown's patent overhead tramways, driven by independent Elwell-Parker electric motors of a nominal capacity of 60 horse power.

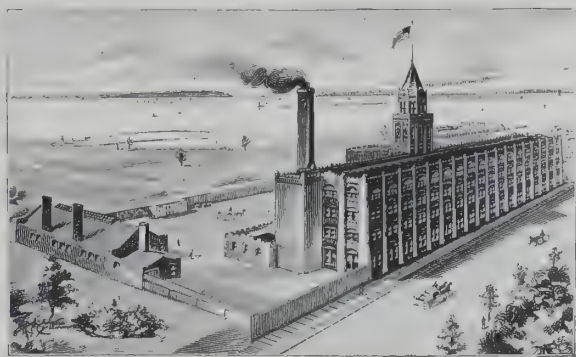
It is quite a triumph for American engineers to receive these orders from the skilled countries of Europe. The Brown Company and the Elwell-Parker Company are both to be congratulated.

—The Chamber of Commerce of San Francisco, Cal., has decided to send a qualified commissioner to Japan to investigate the trade opportunities which are said to exist there for American exporters and manufacturers. The merchants of the city will subscribe the necessary funds.

—American files are being imported and sold quite largely in the United Kingdom, and British filemakers, ironmongers and trade journals are considerably exercised over the fact. In discussing the matter some of the manufacturers contend that the proper way to prevent such importations is to impose the same duties on American files as are levied on British files sent to this country.

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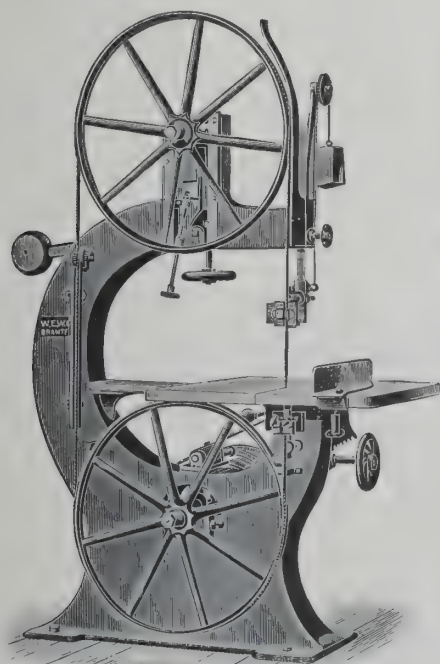
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No. 3.—36-inch Wheel. Weight, 2,000 lbs.

BAND RE-SAWS.

No. 5 Band Resaw.—48-inch wheels; saws 24 inches wide, 5 to 40 feet per minute. Resaw swings clear of machine when required. Weight, 4,500 lbs.

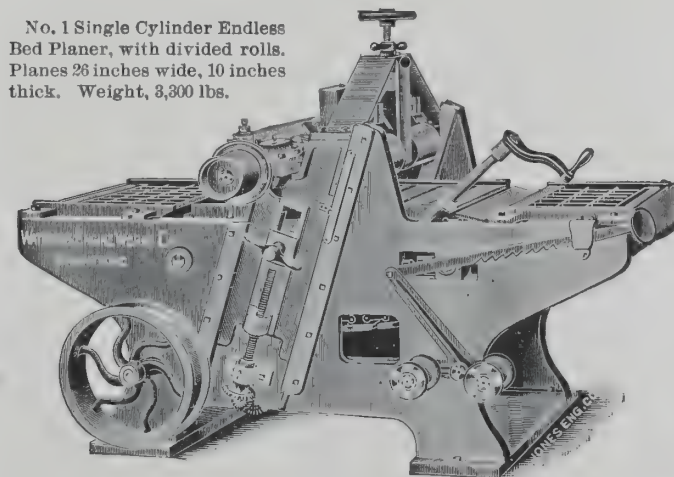
No. 6 Band Resaw.—48-inch wheels; takes saws to 3 inches; cuts 30 inches deep. Weight, 4,300 lbs.

No. 7 Band Resaw.—54-inch wheels; 4-inch saws; cuts 30 inches deep and to center of 10 inches. Weight, 5,300 lbs.

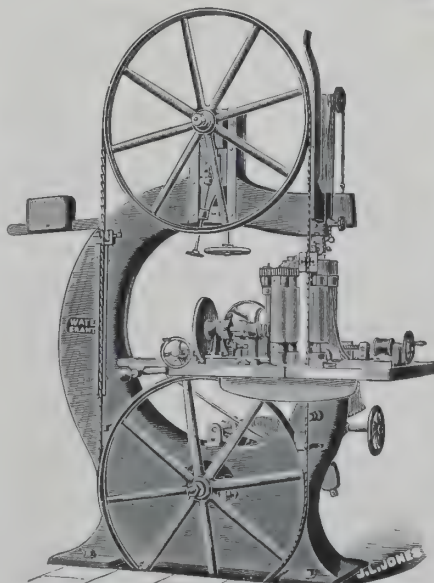
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No. 1 E. B. Planer. Weight, 3,300 lbs.; like cut.
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Export Trade for American Electrical Machinery.

THE export branch of the dynamo and motor market is apparently in a healthy state. It is not, indeed, recognized as such a leading feature of the business as is now the case with machine tools, but those companies who have entered it extensively report that this year has brought to it considerable improvement. This export business is in great measure carried on with South American countries, but some concerns have dealings with Europe, South Africa, Australia, etc. Instead of generalizing, we may consider what a few of them, individually, are doing.

An important phase of the Spanish-American trade is the utilization of natural sources of water power by means of electrical distribution. A company who make alternating current dynamos have just shipped 1,000 horse power of electrical machinery to Jalapa, Mexico, to be used for a 14-mile transmission for lighting and street railway purposes, coffee grinding and cotton mills, etc. For development of water power also they have shipped machinery within the last three weeks to Zacatecas, Mexico, to Venezuela, and to San Domingo, the latter a duplicate of a shipment made six months previous. They say one order brings another and that they have not been trying very hard to push their export business. They are still running full time, having up to July been running both night and day, and are anticipating a good business.

A certain company who manufacture dynamos, power motors and other electrical goods, but one-half of whose business consists of fan motors, report about double the domestic and foreign trade of last year. Another concern speaks of having shipped quite a number of fan motors to South America.

A large local supply manufacturing company, making dynamos and motors as well, report that, although the volume of their export trade is very much smaller than that of domestic, it shows relative improvement this year as compared with the latter. Their business with Spanish America has been better this year in electric lighting material than ever before, and in other classes of manufactures about as good as ever.

Iron vs. Steel for Pipes and Tanks.

IN steam and water pipe and certain tanks iron is returning to favor, though prices are higher than steel. The cost of cutting and threading steel pipe and the fact that the thread is apt to strip is a serious objection to steam fitters. Again there is no doubt it is more apt to "pit" than iron pipe, and hence it is preferred to steel by an increasing number of people. In steel tanks, especially those used in breweries, distilleries, sugar refineries, etc., for holding warm liquids, distilled water or water impregnated with alkalies, there is also an unaccountable tendency to "pit". In some tanks side by side, or even in some plates in the same tank, some will be perfect while others rapidly eat away, and this occurs under exactly similar conditions. Tanks of steel that have been in use for a year or two only are found to need extensive repairs or are quite useless, while the iron ones are apparently destined for years of service. The return of iron for tanks will, however, be slow, as its cost is greater than steel, and boilermakers are somewhat reticent in advocating a better article if it costs more. Inasmuch as the price of steel is influenced to a considerable extent by manipulation, it is fair to expect the price will be advanced at the first opportunity, and will some time pass that of iron. Then the friends of iron can consistently recommend it, and fortunate the buyer who makes his purchase under these conditions.—*The Boiler Maker.*

American Iron and Manufactures for China and Japan.

THE cost of transportation is somewhat in the way of capturing the Japanese market, but American manufacturers are filling orders as fast as they arrive. A cargo of Alabama pig iron was shipped last week from Philadelphia, and Japan proposes to test it by using it in the manufacture of ships and railroad machinery. Should the samples prove satisfactory large quantities will be ordered immediately. It is expected that during September Japan will decide to award a contract to the Cramps and the Union Iron Works for several war vessels. Foreign trade of this class is picking up greatly since May. Several Western iron firms report negotiations with the Japanese Government that involve quite extensive deals. The latest item of trade interest from the Orient states that the bicycle craze has struck China and Japan, while American wheels are used almost exclusively. The Chinese ride more than the Japanese, because the new wheels are too large to suit the little yellow men. Some big shipments of small frame wheels are eagerly awaited by the Japanese. American barbed wire and nails have already secured a foothold in both countries, and a New Jersey firm has just received an order for \$13,000 worth of minting machinery for the Chinese Government.

SEVERAL journals of London, England, are now printed on white paper made in the United States; a New Hampshire paper mill is supplying white paper to a Scottish publishing house, while the *Freeman's Journal*, Dublin, Ireland, has contracted with an Ottawa, Canada, paper manufacturer for its regular supply of newspaper. Australia also uses American paper. The American continent must ever be the leading factor in the world's supply of white paper. The paper mills of the future must be located within easy reach of the great spruce forests. A single paper pulp mill in the State of New York uses 70 carloads of logs and shortwood daily. Its annual consumption is 30,000,000 feet of waste lumber.

The Youngest Metal.

ALUMINUM, the youngest of all metals, is rapidly coming into general use. It was discovered by Frederick Wohler, a German professor, in 1827; but to St. Clair Deville, a Frenchman, belongs the honor of being the founder of the aluminum industry.

The first article made of this metal was in compliment to Louis Napoleon, who had helped Deville—a baby rattle for the infant Prince Imperial.

In 1855, when the first aluminum company was formed, the cost of a pound of the metal was about \$200. In 1889 Charles M. Hall, of Oberlin, Ohio, U. S. A., patented an electrolytic process. He, with a few of his friends, then started a small plant on the bank of the Allegheny River, 18 miles above Pittsburgh. The first year the company produced 75 pounds of aluminum a day, which was sold for \$4.50 a pound. In 1895 a company built a large plant at Niagara Falls, and this year it is building additional works. When these are completed they will have an output of 11,000 pounds daily. This will put the United States in front as the largest aluminum-producing country in the world.

Aluminum weight is about one third of that of iron, and only steel of the highest quality and the best aluminum bronze will give a greater strength for a given weight than aluminum. It stands high in the list of malleable metals, and can be drawn into wire 1 250 of an inch in thickness. It is an excellent conductor of electricity, and would, at 20 cents a pound, take the place of copper for all electrical purposes.

In shipbuilding, where lightness is demanded, aluminum meets every requirement. Corrosion and galvanic action are easily overcome by properly painting the part subject to the action of the water and by using aluminum rivets. France and Germany have several torpedo boats made of aluminum, and pleasure yachts every year are being constructed of this metal.—*New York Sun.*

American Cars in England.

W. M. ACWORTH, in a letter to the *Railroad Gazette*, dated London, says: "Steadily, and of late by no means slowly, our passenger rolling stock is being Americanized. A week or two back the Great Western, which has the longest mileage of any line in this country, introduced its first dining car, this time on the route between London and South Wales. Dining cars to the west of England are to follow in a few weeks. The Great Northern has just completed a pair of first and third class dining saloons for the London-Leeds service, each mounted on six-wheel bogie trucks and connected by Gould vestibules and automatic couplers. The first class car is about 62 feet and the third class nearly 66 feet in length, with a width of 9 feet and a height of 13 feet 4 1/4 inches—dimensions which would have been thought quite impossible here only a very few years back.

"The Northeastern has just brought out a new train for its local service, which is mounted on bogie trucks throughout, and it is understood that this company will in future build bogie stock only for its ordinary work. Jointly with the Great Northern and the North British the same company is responsible for two new trains for the east coast service to Scotland, which will apparently be more like the great American trains than anything we have hitherto seen in England. Eight coaches, each on 12 wheels, with a total length of 530 feet, with Gould vestibules and automatic couplers throughout, will have a total weight of about 270 tons and seating accommodation for 300 passengers. The bulk of the train will be on the compartment system, with corridors at the side, but one third-class carriage will be somewhat of the nature of an American lay car, for it will be divided only into 3 sections, seating respectively 23, 16 and 15 passengers, and the passage will be right down the centre. Attendants on the train will supply tea, coffee and other light refreshments. It should be added that this train, as also the Northeastern train last mentioned, is to be fitted with the 'quick-acting' Westinghouse brake, here adopted for the first time in actual working in England."

American Electrical Plants for the Far East.

A LARGE quantity of American electrical goods and apparatus has found its way to the Far East, and the market is one that appears to have a capacity for rapid growth and development. The firm of Bagnall & Hilles, of Singapore, Straits Settlements and Yokohama, Japan, has been giving its special attention to this field, and the results are already of a very hopeful and promising nature. One of its recent contracts of more than usual interest is that made with the Sultan of Koetei, one of the Straits potentates, who has built a new palace and who wants the best electrical plant to be had. Messrs. Bagnall & Hilles are doing what they can to gratify this laudable ambition. The palace will be fitted throughout with Habirshaw wires and cables, and the other parts of the equipment are to be of equally high standard.

—A handy little illustrated catalogue of power pumps, hydraulic and pumping machinery for all purposes, is now being mailed to the trade by Rumsey & Co., Limited, Seneca Falls, N. Y., and 35 Dey street, New York City. The closing pages are occupied with notes on fire protection in factories, tables, measures, useful formulas and alphabetical index of the contents.

—The city government of Mexico invites bids from all over the world for pumping machinery to be used on the city's sewers. Bids must be in by November 14th. It is reported the city engineers are giving attention to plans for the new sewer system, and bids are being made by Pittsburg and Scotch firms for 100 miles of earthenware piping. The Scotch bidders, it is claimed, are so far \$200,000 under American bidders.

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10 " Square "	4 " Taper.
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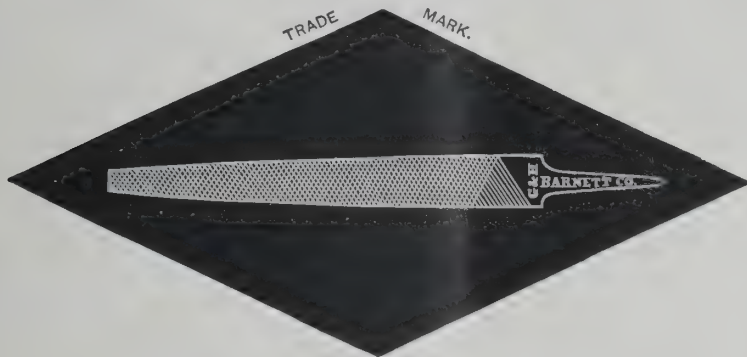
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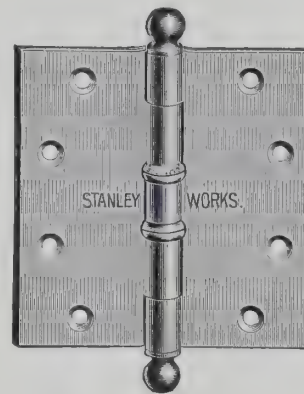
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as good as new.

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**RUSSET LEATHER
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For polishing Russet and all
fancy colored shoes.

Produces a lasting lustre.

PRICE, - \$9.00 PER GROSS.

American Rubber Goods in England.

(From Our Special London Correspondent.)

LONDON, Sept. 1, 1896.

IT is now more than two years ago since I called attention in these columns to the opening which exists for American rubber goods in this country; and, indeed, not only in England, but throughout the whole of the European continent. Since my first letter appeared on the subject the sale of American "rubbers" and overshoes, as they are more generally known here, has increased very considerably. During the last Winter months I have been astonished to see the number of people wearing the familiar rubber shoe, knowing well how very conservative the British folks are in all matters affecting their dress. But it only needs some few distinguished persons to set the fashion and there would be such a demand for these goods as would tax all the energies of the Boston manufacturers to supply them.

In my previous communication on this question I pointed out in as clear language as possible the great advantages to be derived from the use of the overshoe. Since that time THE AMERICAN EXPORTER has circulated quite a deal in this country, and its persistent and steady advocacy of the merits of American goods has had the desired effect of promoting the sale of American manufactures in the United Kingdom and throughout Europe generally. As regards this matter of rubbers I have seen enough to show me very conclusively that the present activity among representatives of American firms here is due in great part to the support and encouragement afforded by this journal, and this, when backed by a really excellent class of goods has proved irresistible.

I am assured by those best conversant with the trade in England that any prejudice which may at one time have existed in the minds of the British public against American rubbers has decreased very considerably and only exists at the present time among a few antiquated fossils who are always willing to put a premium upon native incapacity. It is no longer a question as to where an article is made, but it is a question as to the utility of the goods offered, and when this is the problem put before the salesman he has no difficulty in answering it in a satisfactory manner so far as this line of American goods is concerned.

The climate on this side of the Atlantic being so exceedingly capricious it offers an excellent opportunity for the introduction of sensible footwear. Although London is a comparatively clean city, yet there are miles of streets in the metropolis where slush and mud abound in the thoroughfares. Tens and tens of thousands of pedestrians have to walk about in this dirt all day long with wet and filthy boots, all of which inconvenience might easily be avoided by the use of the American overshoe.

For the information of those who are unacquainted with this article, I may say that the "rubber" is very similar to a slipper, the only difference is that it is made of rubber and is therefore impervious to the action of water. Any person using them preserves his boots from the destructive action of snow and ice water while his boots are also kept quite clean and fit to enter a dwelling house. One argument against the use of the old-time goloshes, which were worn here many years ago, was that they made the feet very hot and prevented the feet from perspiring properly. This result was mainly due to the very imperfect way in which the goloshes were made and to the crude hygienic conditions which then prevailed. They were made to come up to the ankle somewhat after the style of boots, and of course this had the effect of making the feet uncomfortably hot and damp. But with the modern American rubber no such result is produced, as the writer of this article can testify, having worn them all day long both in the United States and in England. Thousands of people who now have them in use in the principal cities in this country can say the same; indeed, the activity of the warehouses where the trade in rubbers is carried on in London fully corroborates what I say. The overshoe certainly saves the boot from wearing out, because more damage is done to shoe leather during a week of dirty weather than is done in treble the time in fine weather. So we get three things by using the American rubber. 1st, it preserves our boots and shoes; 2d, it keeps our feet dry and therefore prevents our catching cold and all the ills which spring therefrom; 3d, it keeps our boots clean so that the wearer can at all times enter a dining-room without first having them cleaned. The only wonder when one comes to think of it is that the use of the overshoe is not universal wherever dirt and dampness exist.

American manufacturers of these goods will find a very profitable market throughout Europe and particularly in England. They must, of course, either come here themselves and establish a branch store or else work the business through a reliable agent. There is plenty of room here for more houses selling first class goods. Retailers will find this line a very profitable one and I am sure that the enterprising storekeepers on this side of the Atlantic will not be slow to avail themselves of any offers which promise to prove remunerative. The American rubber is cheap and it appeals to the masses and not exclusively to the classes.

As an instance of what can be done in obtaining a footing on the English market, I may give the following fact mentioned at the last meeting of the Chambers of Commerce in London. About two or three years ago there was a great strike among the shoemakers in this country and a large South African importer of English boots and shoes found great difficulty in getting the same from London in consequence of the strike, and the result was that American shoes came into the South African market. Samples were ordered from the United States, and the trade of 1895 with America being nothing at all in the previous year amounted to over \$25,000 in the following twelve months, and one firm alone is importing that value in one year from America. This fact simply shows how great is the market for American manufactures abroad.

An English Importer's Views.

HENRY HARRINGTON, an importer from London, is visiting the United States for the first time, his trip being for business and pleasure. He is a large importer of reed organs and has for a number of years been importing these instruments from two of Worcester's manufacturing concerns.

He has visited New York, Boston, Chicago, Saratoga, Toronto, Canada; the Thousand Islands, Lake George, and spent four days at Niagara Falls. In an interview published in the *Telegram* of Worcester, Mass., he is reported as saying:

"We make good pipe organs in England, but we import our reed organs. They can be made cheaper in this country on account of the difference in the price of timber. We can sell American organs cheaper than we can produce them."

"How about pianos?"

"The English can successfully compete with Americans in the making of pianos. Competition is not so sharp in pianos as in organs, and the American style of piano does not please our people. The American pianos are funereal in appearance, while veneered walnut cases or something light and artistic in appearance are what are in demand in England. Upright or what we call cottage pianos are the rage. American pianos do not cut much figure in England. The cheapest piano is retailed in England at £20, or \$100, while \$200 would be about the average retail price."

"The organ trade is different in England from what it is in this country. The cultured class buy organs. Pianos come first, and if the family can afford it an organ is bought besides. Here they are used for hymns and in homes in villages and in the country, I am told. Over our way they are largely used for operatic music, for classical selections."

Asked in regard to his impressions of the United States, Mr. Harrington said:

"I have been charmed with the scenery and should like very much to see more of it. The rush of the people is different from the custom in England, where we enjoy life more as we go. In Chicago, particularly I noticed men rushing about. They didn't appear to have time to talk there and lunch took about seven minutes. In England we take three-quarters of an hour for lunch always. They talked so fast in Chicago that one could hardly understand what they said."

"One of the things which has impressed me particularly is the extraordinary height of some buildings. An eight story structure is a very large one in London. We have no 16, 18 and 20-story buildings. New York has some exceedingly high structures, but when I saw the Chicago buildings I was amazed at their height."

"I have noticed many men of 30 prematurely gray. Your business men get around at 8 o'clock. You'll seldom find the owner of an establishment in London at his office before 10 or 10.30. Your street cars go at four times the speed ours do. Your men are all rushing to get rich and apparently only have a minute more to live."

Mr. Harrington said he thought some American cities were very poorly named.

"Coming through New York State," he added, "the trainmen called out Rome. I looked out to see something in the line of cathedrals or perhaps a coliseum. It was a factory town and railway point. We look at Rome as being a marvelous city and can't see why a factory town should be given that name."

"One thing I notice all over, of course, is the absence of cathedrals and castles. We have many of them. The cathedral at Worcester, England, is very fine. It was built about the 11th century. The place, like all cathedral towns, is standing still. It has a population of about 35,000, and tourists who come there to see the cathedral keep the place awake. Many retired persons of means reside there."

"Worcester is beautifully situated with hills all around it. The Worcester beacon, a mountain, can be seen from the town."

American Wall Paper.

THE export of American wall paper abroad, it is claimed by the *Boston Advertiser*, still continues to be of an encouraging character. The consignments sent abroad were especially satisfactory, considering the season of the year, and amounted in the aggregate to \$13,598. There were sent in one week to Melbourne \$2,372 worth, to London \$2,284, to Mexican ports \$2,795, and to Antwerp \$1,756. A good deal of energy has been put into the work of building up this trade on the part of the domestic manufacturers, who have an efficient export committee with Col. E. H. Haskell of Boston at its head, engaged in making fallow the ground to be cultivated by the trade in general, and facilitating in various ways the introduction abroad of the products of American mills.

An interesting report of the work of this committee has just been submitted to the American Paper Manufacturers' Association, and gives an excellent idea of the scope and progress of this valuable auxiliary to the paper trade. Col. Haskell, who has returned within the month from a survey of the European market, said:

"While it is a matter of gratification that the export of American paper and fibre has shown a large increase during the past two years, except possibly to those countries affected by the repeal of the reciprocity treaties, the fact that the export of paper from England has shown a marked decrease, while her imports of paper from other countries has largely increased, suggests to the paper-makers of America an opportunity for an extensive trade, which should be carefully and promptly cultivated."



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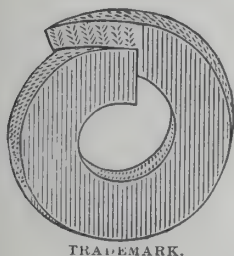
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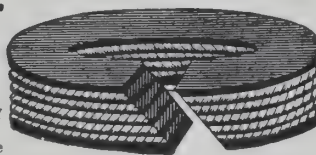
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Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

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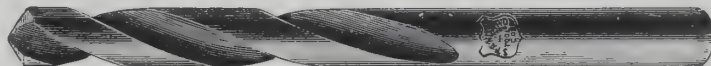


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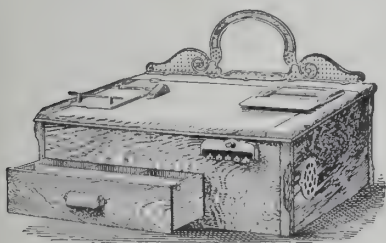
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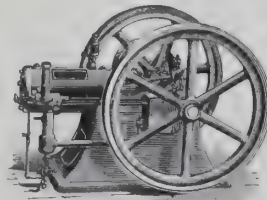
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This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

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Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

An Encouraging Feature.

ACCORDING to the *Boston Advertiser* the expansion during the present year of our foreign trade in cotton goods, especially with China, furnishes the one bright spot in the present aspect of the cotton-manufacturing industry, as there is practically nothing doing in the way of a domestic demand and no one would venture a prediction as to when there will be a sale for goods for this market.

Much had been done already in the direction of supplying the far East with American made goods and an improved demand over previous years has been apparent during the present one. Officials of prominent export mills who have been seen by *The Advertiser* of late report an abundance of business at their plants and a gratifying outlook for the future. Treasurer Nichols of the Dwight Mills said that they had many orders ahead and that it would be some time before they were completed.

Orders for the Chinese trade had been nearly double those of last year, and in several instances American manufacturers have practically diverted their mills from the manufacture of all lengths of goods to the production of 40 yard pieces, or even lengths only, which are the only qualities exported to China. These manufacturers had made reductions in their prices to meet the competition of goods manufactured in other countries. When more prosperous conditions return in this country, however, the export trade may diminish, as the manufacturers will naturally prefer to sell in the home market when better prices can be obtained here.

Following are the exports of cotton goods, practically drills and sheeting, which were sent from the United States for the years named: 1898, 82,385 bales; 1894, 78,769; 1895, 78,200; 1896 to date (approximately), 95,000 bales.

The increase in this trade this season is attributed to two causes: first, a reaction from the dullness of the past few years and especially from the interference with trade caused by the recent war between China and Japan, and, second, to the fact that owing to the poor conditions of trade in the home market, American manufacturers have made special efforts to secure foreign trade, so that in some instances prices for American cotton goods have been relatively lower than those of English and other foreign makes. The American manufacturers have, it is said, been cutting into the trade of foreign producers quite heavily this season. The following table shows the deliveries of American cotton goods and those of other countries at Shanghai from January 1, 1896, to July 3, 1896, and also for the corresponding period of 1895:

Cotton Drills (Pieces 40 Yards.)			
	1896.	1895.	
American.....	301,810	188,392	
Other countries.....	102,500	111,275	
Sheetings (Pieces 40 Yards.)			
	1896.	1895.	
American.....	680,365	368,796	
Other countries.....	511,000	227,196	

The goods comprised under the heading "other countries" come principally from England, Holland and Bombay.

Mr. Stevens, of the American Trading Co., said in an interview that there has been a decided increase in the volume of exports to China, especially in the case of drills and sheetings. "Our purchases of these goods for export thus far this year have been nearly double those for the whole of last year. The prices of American cottons have been relatively lower than those of the Manchester manufacturers for some months.

"There has also been an increase in the demand for machinery, sewing machines and other manufactured products. The increase in exports has been due in part to special efforts made by American manufacturers, but it is also due to a considerable extent to the reaction which set in after the recent war between Japan and China."

The Boott, Lowell, Mass., mills are now running principally to supply the export trade. The orders from China are brisk because of the recent war, during which our Chinese friends did not buy any cloth. They will probably purchase heavily during the remainder of the year, when their trade will fall flat.

South America and South Africa are sending up heavy orders. To accommodate this export trade the Boott mills are running an unusual quantity of coarse cloths.

A Southern mill owner, President Hickman of the Graniteville Mfg. Co. of Augusta, Ga., said regarding the output of his mill that he had sold nearly 12,000 bales of goods for export during the past three months. Nearly all my looms are on export goods. I am not prepared to say that there is any especial reason for this, except a good demand and very low prices and unusually low freights. Many years ago I paid \$4.50 per 100 on goods to San Francisco. Now I get a through bill of lading to Shanghai for \$1.17 per 100.

The manufacturers South are increasing their export business rapidly, because they are making good goods, such as are wanted for export. It is a fact that I have sold goods for China for better prices than I can get from the home markets. I trust that in the near future we will have a very large trade with South America. When we get the Nicaragua canal and American ships floating the American flag, with banking facilities without going to London, then we will "possess the land," and the South will "blossom as the rose."

—Mr. John Finlay, of Holywood, Ireland, an English electrical engineer, is inspecting the mining camps of Colorado, and is said to be collecting data as to the use of electrical power in getting out low grade or deep ore by means of electrical power. The work done in America in the department of electric mining is attracting the attention of mining engineers throughout the world.

Increasing Trade with South America.

A SHORT time ago we mentioned the fact that a company of tourists representing American industrial and commercial interests had started for South America to examine the prospect of increasing our trade with our Southern neighbors. In view of this fact, the recent announcement made by a journal published at Lima, Peru, is quite interesting. This paper states that a few days since the first vessel of the West Coast Line, inaugurating steam traffic between New York and the principal ports of Chili and Peru, left Callao on her return voyage to New York. Until the present time this company has carried on trade with sailing vessels, but it proposes henceforth to send out a cargo steamer regularly every two months from New York to Callao. It has been two years since the New York & Pacific Steamship Company, better known as the Merchants' Line, opened a regular steamship trade between New York and the principal ports on the Pacific coast of South America, and now comes a competing company to divide the proceeds of this trade and to afford to these countries a new line of communication with the United States. This company in starting out had but three vessels, now it has five. Prior to the existence of this line of steamers, Peruvian trade with the United States had to go by the Panama route, where it was subjected to the overcharges and burdens occasioned by this reshipment through the Isthmus. This forced the mercantile interests in the United States to go to Liverpool for the products of Peru. But with steam transportation direct from Peruvian ports to the United States the interests of both countries will be better served. A steamship line was badly needed and it is expected that the new line will do much toward promoting commercial interests between the United States and South America.

In recognizing trade opportunities in South America the United States has been considerably behind Great Britain. The journal referred to says that the commerce of the Amazonian region of Peru is increasing daily. Nearly all the carrying trade there is in the hands of the powerful English navigation company, which, with its 60 steamers of various dimensions, maintains without reshipments a traffic between Liverpool and Manaos. Hence Peruvian commercial authorities express the hope that the United States will lend its powerful aid in the formation of a steamship company that will establish regular communication between American ports and the ports of the deep tributaries of the Amazon. Taking everything into consideration, it is evident that our trade with South America is soon to be materially increased.—*American Manufacturer.*

American Enterprise in Japan.

GREAT BRITAIN apparently has another grievance against America. At least, the enterprise of manufacturers on this side of the ocean has practically driven the English out of the railroad field in Japan, and for the facts in the case the reader has only to refer to a recent report of the British Consular service.

It appears that London capitalists and manufacturers were among the first to appreciate Japan as a field for trade in railroad supplies. They sent out engineers to survey new roads, and, of course, furnished the material for them. At the start, also, they managed the lines for their apt Oriental pupils and gave them an insight into the business. The Japanese, however, soon discovered that materials for railroad building and equipment could be easier and more cheaply obtained in America.

To cite an instance, two contracts were let out about the same time for two railroad bridges of the same dimensions—one to a British and one to an American engineer. The former took the contract at a specified sum, ordered his material from London and constructed the bridge. The latter submitted his plans, allowed the Japanese to purchase the material in America, and saved for them nearly 50 per cent. on the cost of the steel from which the bridge was built. This led to a general dismissal of English engineers throughout the empire, and when the report referred to was written only one was on duty in Japan.

This is a somewhat striking illustration of what may be accomplished by Yankee enterprise in foreign lands. All that is required is to study the conditions, and Great Britain can be supplanted in almost any part of the globe.—*Baltimore Herald.*

—P. F. Olds & Son, Lansing, Mich., have brought out a horseless carriage, which is pronounced as probably the most successful vehicle of its kind turned out. It is operated by gasoline at an expense of less than 2 cents a mile, and it is claimed that it runs 12 miles an hour on an ordinary road.

—Up to recently British merchants were offering American pig iron on behalf of American sellers. Another move in this direction has now been taken and a fresh stimulus to that business, by the appearance on the Manchester Stock Exchange of a direct representative of one of the largest American iron producing companies. He has been negotiating for business and quoting substantially lower prices than have hitherto been offered. The iron has been offered on the basis that it is equal in quality to the ordinary disirict foundry brands. It is represented that American producers are genuinely anxious to cultivate a British trade and are not merely disposing of surplus stock. This is contingent upon their being able to ship the iron at ballast rates. British buyers have made offers for considerable quantities, which are under consideration. There seems to be a general impression that the trade is not likely to be permanent, but only intermittent. We wonder if British shippers will raise their prices above ballast rates now that they find American pig iron a marketable commodity.—*London Hardwareman.*



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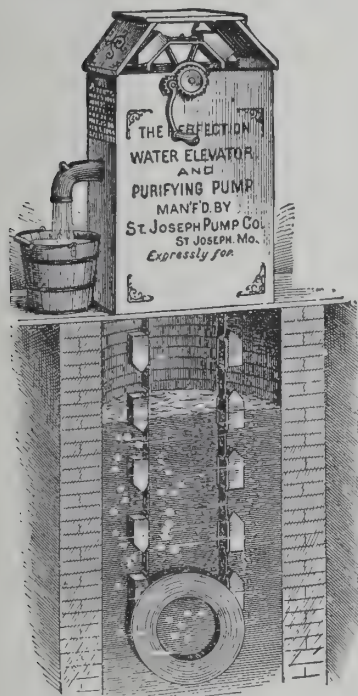
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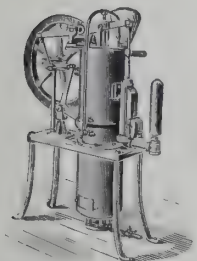
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WATER YOUR LAND
AND WATER EVERYTHING
DEPENDENT UPON WATER

WITH THE

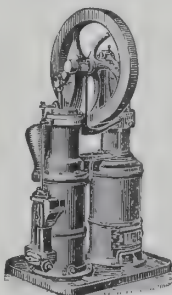
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U. S. A.

REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—it is in splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,

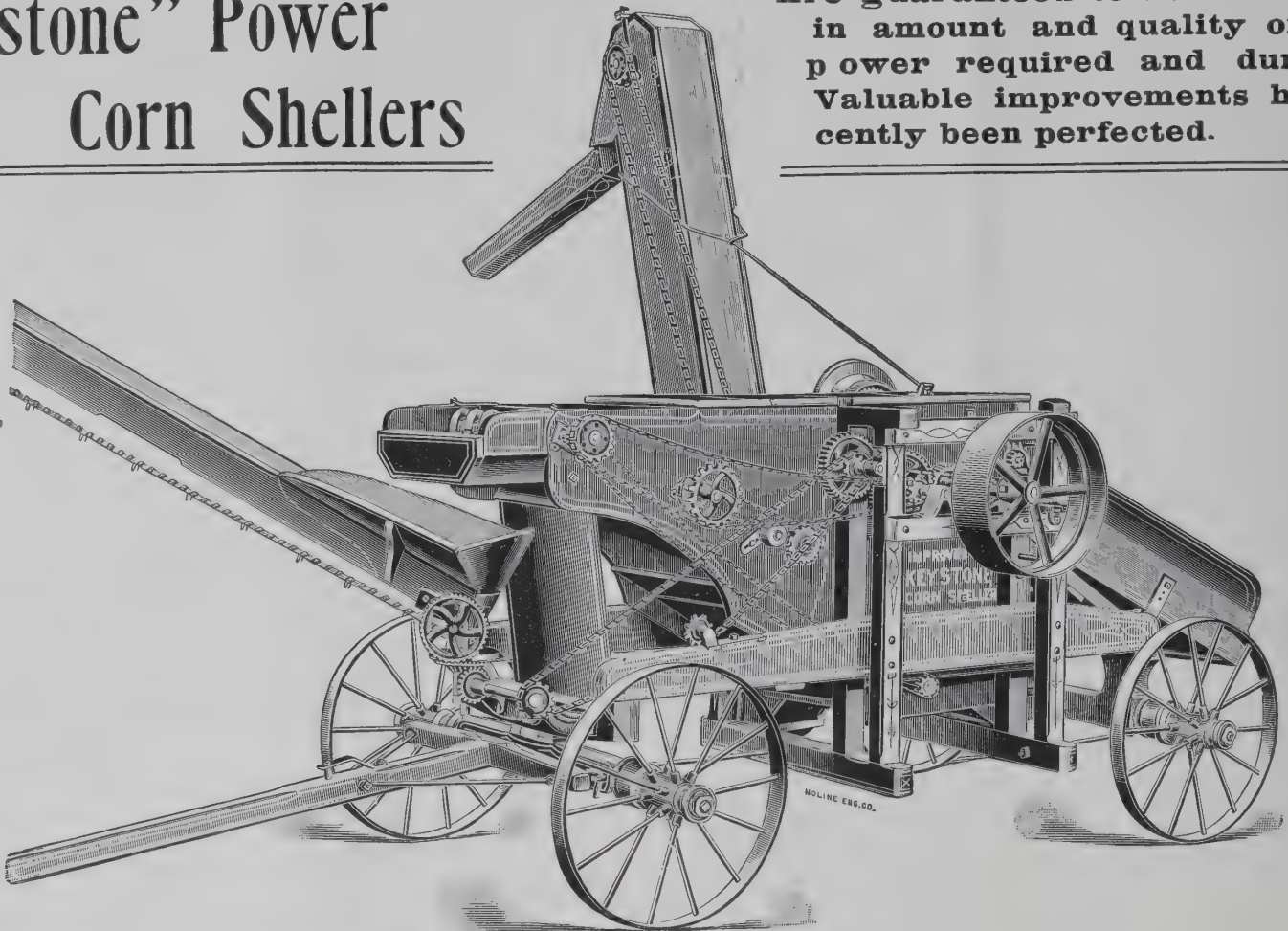
Master Schooner "Florence Shya."



"Keystone" Power Corn Shellers

Are guaranteed to be unsurpassed
in amount and quality of work,
power required and durability.
Valuable improvements have re-
cently been perfected.

"X. L."
"KEYSTONE"
"PONY"
ARE FOR
POWER
OR
HAND USE.



6 HOLE,
4 HOLE,
2 HOLE
"KEYNOTE"
ARE
SELF-
FEEDING.

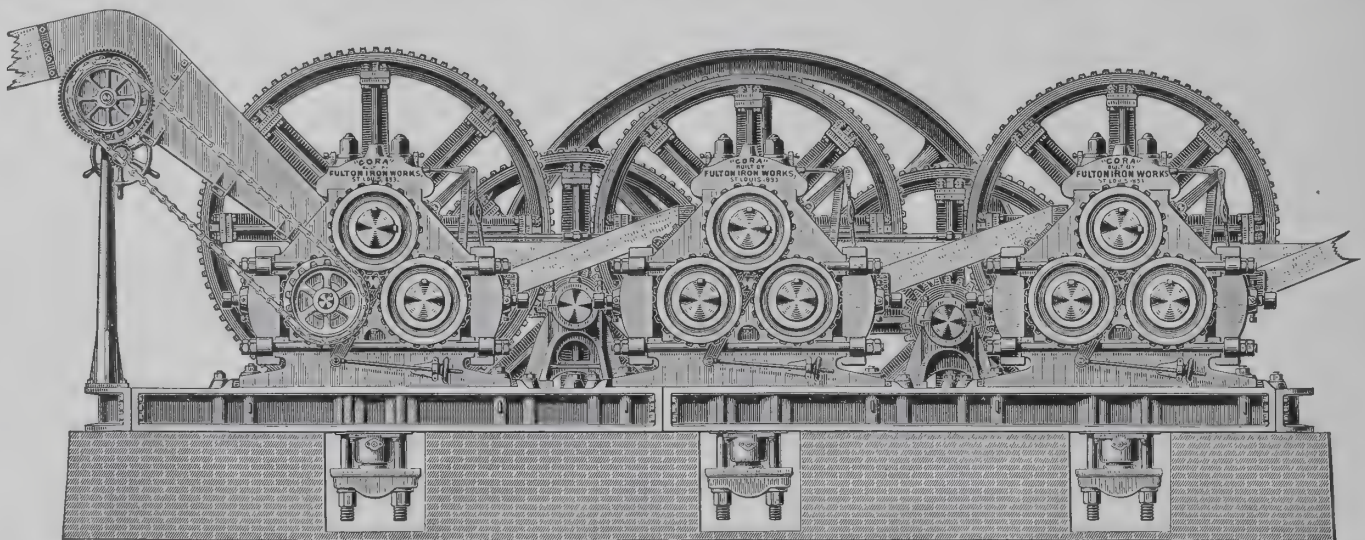
SEND FOR DESCRIPTION AND EXPORT PRICE LIST.

Made by
KEYSTONE MANUFACTURING CO.,
STERLING, ILLINOIS, U. S. A.

Address Export Office,
KEYSTONE MANUFACTURING CO.,
B 19-21 Produce Exchange, New York, U. S. A.

"CORA" Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by **"FULTON IRON WORKS,"** St. Louis, Mo., U. S. A.

Per S.S. "COPTIC."

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

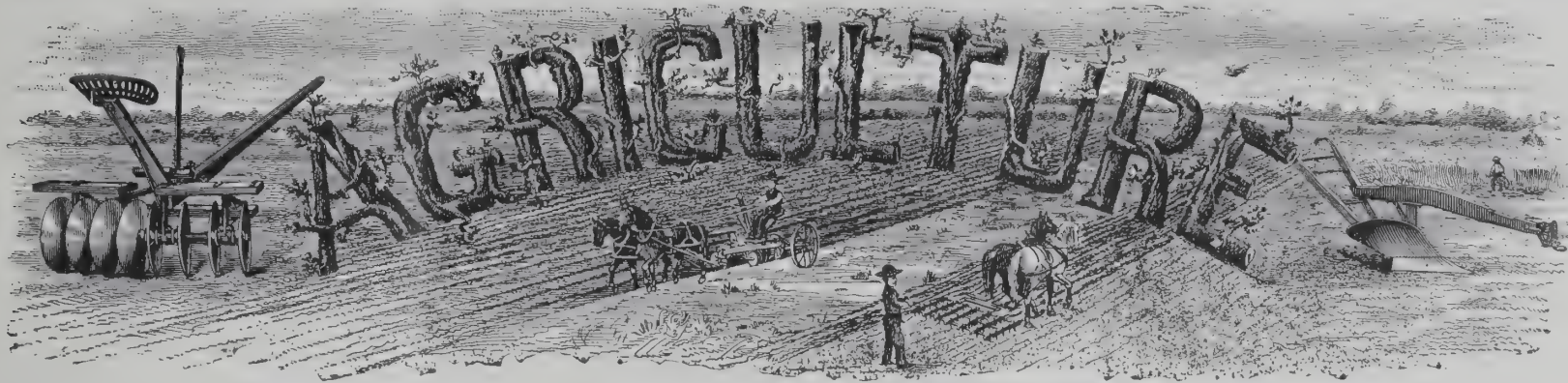
Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104 $\frac{3}{4}$; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

Farming by Machinery.

THE ease and rapidity with which all kinds of farm work are performed in the State of Kansas, U. S. A., by the use of farm machinery, says D. W. Blaine, in "A Kansas Souvenir," has made the Kansas farmer the envy of all classes. He is sometimes charged with prodigality in the purchase of new machinery, but ere we pass judgment on this we should remember that the past 20 years have given us, annually, such great improvements in all classes of agricultural implements and farm machinery that the progressive, intelligent and industrious farmer recognized that it was economy to discard the old for the latest improved.

With the opening up of the Great West (especially Kansas) it became apparent that the immense area of tillable land was too large to be farmed in the old way. The inventor, manufacturer and farmer labored together to meet the requirements. The first machines, being largely constructed of wood, doing fairly good work in the field, were found to be shortlived, clumsy and expensive. Gradually perfection has been reached, and all classes of farm implements and machinery are now practically constructed of iron and steel—symmetrical in form, light in weight, easily operated, sufficiently strong to withstand the most severe tests, doing the work perfectly, and will with proper care serve an ordinary working lifetime.

The cost of manufacturing has been greatly reduced, and manufacturers are now able to furnish perfected machinery at about one half the prices of the inferior machinery of 10 and 15 years ago. With these conditions existing it is apparent that the sharpest kind of competition will be found on the farm. Work must be done thoroughly and in season, with the least possible expense, and the exercise of rigid economy. This can only be accomplished by the use of modern machinery on tillable land, free from obstructions, etc.

Kansas offers more in this respect than any other State in the Union. The surface of her soil is generally level, free from bowlders or heavy timber. There is not an acre of swamp land within her borders. The tracts devoted to crops are usually free from fences—the herd law requiring that stock be fenced in, not out. Her soil is dark loam, with just enough sand to work freely in plowing or cultivating. All survey lines run north and south, east and west, thus dividing the land into perfect squares, the most convenient and economical for farming.

The intelligent Kansas boy who is able to guide his team, with the double plow, cultivators, planters, harrows, drills, wide swath mowers, rakes, self-binders or headers, accomplishes as much as the strongest man. Farming in Kansas means sitting on a comfortable seat, guiding the team and machinery, making farming pleasant as well as profitable. That Kansas is foremost in the use of farm machinery will be understood when it is known that two-thirds to three-fourths of all the farm implements sold from Kansas City, which is the largest distributing point of that class of machinery in the world goes to the farmers of Kansas. The farmer who is located in less favored sections of the country, where the surface is rough and hilly, or obstructed with stones and stumps, has no more show to compete with the Kansas farmer than the old lady with the spinning wheel and hand loom with the modern spinning and weaving devices used in the best-equipped factories.

GREENVILLE, TENN., export trade in tobacco, which began by an experimental shipment about two years ago, has now grown to very encouraging proportions. Three firms are now shipping every month about 120,000 pounds of tobacco to Liverpool, at an average of 20 cents per pound, making the handsome sum of \$24,000 per month, or \$300,000 annually which Greenville gets from foreign markets for leaf tobacco alone. Besides this they are having some demand from Liverpool for manufactured tobaccos, a shipment of 500 boxes having been made a week or so ago. Every report received from Liverpool brings evidence that the grades peculiar to Greenville are growing in favor and the demand grows with it.

—For seven successive months the United States has had favorable trade balances, that of June showing an increase of some \$12,000,000 over the corresponding month last year. Low prices, due in part to business depression, have stimulated exports, still this increase in the foreign demand for American manufactures is gratifying, and while in some instances the export market is utilized as a safety valve for overproduction, in the main the augmented sales are traceable to the push of home enterprises and a genuine foreign appreciation of our products.

American Cheese.

THE year book of the United States Department of Agriculture, just issued, contains an interesting article on American cheese. The writer of it, Henry E. Alvord, chief of the Dairy Division, says that a taste for cheese has never been generally acquired in this country, and that in foreign countries the consumption of it per capita is several times as large as in the United States. In Europe it takes the place of meat to a considerable extent with all classes of people. In America, where meat is less dear than in Europe, nobody seems to think of substituting cheese for it, although a dollar's worth of cheese supplies considerably more nutritious material than a dollar's worth of meat. Most Americans, eat cheese as a relish, not as a staple article of diet. One rarely sees a day laborer in America eating cheese at noon. He usually has a piece of cold meat. Mr. Alvord is of the opinion that a greater consumption of cheese would be a good thing for us, and he urges manufacturers and merchants to tickle the palate of the consumer and increase the sale and use of it. Two things are necessary in order to accomplish this: The cheese must be of a certain standard of excellence, and more attention must be paid to varieties.

The inroads made upon our cheese industry by Canada have already awakened our manufacturers to the necessity of catering more carefully to the tastes of cheese-lovers, and during the last few years they have put upon the market many imitations of foreign cheeses which can be told from the real thing only by an epicure. America imports about 9,000,000 pounds of cheese every year. She consumes besides about half that quantity of domestic Gruyere (Schweitzerkaese) and other imitations of foreign brands, and about 195,000,000 pounds of the ordinary cheese. Among the domestic varieties in whose manufacture success has been obtained are sage cheese, which has not the consumption it deserves; American "Neufchatel," an excellent cheese whose price, 5 cents a roll, has made it very popular; the American Gruyere, which is to be had in a good many German restaurants under the name of Schweitzer; and the rich cream cheese which comes from Philadelphia in square cakes, and is much like the Neufchatel, but finer and dearer. The connoisseur can tell the genuine Gruyere in a moment by a glance at the holes in it, and there is a quality in its consistency and flavor which it is said the imitation cannot equal. It appears that much success has rewarded the efforts to make good domestic pineapples and Edams, but the lover of cheese is loth to accept them in lieu of the imported ones.

Two imported cheeses which continue to defy imitation are the English Stilton and the French Roquefort, though manufacturers are trying their best to get the secret of their peculiar qualities. Such imported cheeses as Parmesan, Limburger, Brie, and Camembert are growing in favor, and are seen more and more commonly on American tables, and some of them have been imitated in our domestic factories with considerable success. None of these imitations, however, has a large sale, for the reason that a Yankee who has cultivated his taste to the enjoyment of Brie or Limburger wants the genuine or none at all.

Pure California Wines.

THE wines of California are rapidly winning their way in public favor, and there seems to be little or nothing in the story that they are sent to France, adulterated and returned to this country, under foreign labels, and sold at fancy prices. A thorough inspection of the wineries and wine depots in this State has been made by Internal Revenue officials and they claim that the story is false, as is also the intimation that our local wines are adulterated.

They say, however, that large quantities of California wines are being sold under French labels. The label and not the wine is imported.

The wine export trade of this State has been improving very rapidly in the last few years, and owing to the short crop this season the large wine cellars will be almost emptied this Fall. In consequence of this short crop, the demand in the price has been steadily advancing and there is a bright outlook for the wine industry of the State.

The Eastern dealers, notably those in New York, not satisfied with legitimate profits, adulterated the California wines to such an extent as to almost destroy their sale. It is claimed by California wine men that no firm in California has ever practiced adulteration, and since they have established their own agencies in the East, where they sell nothing but pure wines, California has regained her lost prestige, and now has a good market for all her vintage.—*The Bee.*

Prunes and Dried Fruits.

CONSIDERING the distance from the ground of production to the market, California is a formidable rival of France for the trade in prunes and dried fruits. Quite a quantity of California French prunes are sold in France not as California prunes, but as the genuine French-grown article, being fully as good in quality and appearance.

A French receiver of California fruits says:

"Goods must be packed in cases similar to those used by the French, net weight must be marked on cases in kilos, and prices made per kilo and not in and per American pounds. Eliminate all marks, names of firm or place of origin, so as to enable French importers to sell the goods as a French product. The size of the fruit being determined by its number to the pound in America, this same method prevails in France, with the difference that instead of figuring as we do by pound, the size is determined by so many to the kilo, and in order to be successful we must adopt the French way and quote accordingly. Small fruit is not wanted; such only running from 40 to 60, a few 80, to the pound, or its equivalent figure by kilo, will find a ready market.

"My idea is that prunes should be shipped in good, strong sacks; this will not only save freight charges, but also allow the French to pack the fruit in boxes of sizes and forms best adapted to their trade. As long as we have not our own American houses abroad we must submit to having our product sold without getting due credit for it, and let foreigners reap the lion's share of profit out of our goods. I reiterate what I have written on previous occasions, that the only way we can successfully introduce our goods, compete with other points of production, get all the traffic will bear, and thereby establish a permanent market abroad for our products, without, however, going to extremes, is to establish agencies at some of the principal European ports, with some of our own interested people as agents, and from these points work all Europe."

A merchant in Germany writes on the subject of California fruits:

"There is no use trying to increase the trade by the old way. No German importer will come to California to buy your fruits and import them here. Sooner than do that he will do without them or buy what little he actually needs at New York, where prices are high.

"What I have tried to make people understand is that they have got to brace up and show some energy, and, instead of waiting for European buyers to come to you, send your fruits over here, land them, and sell them. If you can get a good live German firm at one of the great seaports, Hamburg or Bremen, to handle your goods, all right, but some one has got to come here and see these people and make definite arrangements. It cannot be done by circulars or correspondence, and, as both cities are far from Frankfort, I cannot hunt up such a firm.

"The whole business is just as I have stated in my report. California fruits are liked very much in Germany, but from the awkward, costly way in which they are imported, via Chicago and New York, they have to be sold at from 25 to 28 cents per pound, and that puts them beyond the means of the great mass of the people. Unless the California fruit men themselves have the energy to cut out all this expensive commission business and repeated handlings by middlemen, and send in their fruit straight from California to Europe, then I see nothing but to let the business drag along in the old way. There is no use quoting what your fruit can be sold for in California. The point is, What can it be sold for in Germany at the seaport where it is landed? Of course, your commission men will discourage any plan that will take your business out of their hands and make the fruit growers independent of them."

Big Corn Exports.

THIS year promises to be a record breaker in the exportation of Indian corn to Europe and other parts of the world. Since January begun the outward movement of that grain has been much more than double the exports of the first half of 1895.

The increase in this especial branch of the American grain trade is very encouraging, because it promises to have a lasting effect upon our European customers by making them familiar with the good qualities of corn as an article of food. That grain needs only to be more widely known abroad to become far more effective in swelling the export trade of the United States. In many parts of Europe it is still a novel and little understood food, for either man or beast, and in some of the districts where it is least known it would be most useful.

The stimulating cause of the great increase in the exports of maize has been the abnormally low price, but the future demand may arise from other sources more agreeable to American farmers.

AN ORDER for 3,000,000 feet of spruce deals was received in August in Bangor, Maine, and will be shipped at an early date. The big order is dealt out to several prominent firms, of which F. W. Ayer & Co., Stetson & Cutler and the Walkers are said to be three; other firms are interested, too, and the total is divided among them in uneven quantities, ranging from 250,000 upward. This method will facilitate matters, because one mill could not saw such an order in a few days. This shipment will be made in three steamers, all of which will be of English register and of the "tramp" variety, as a matter of course. The contract calls for the beginning of the work early in the Fall, so that by the 1st of September things will be about ready for the first shipment. The first lot to go across will consist of 600,000 feet and the steamer will be in port in a few weeks ready to take it. English tramp steamers are preferred to American sailing craft owing to the low rate of insurance placed on the former.

Beans and Barley for Japan.

THE *Herald* of Los Angeles, Cal. says, under date of August 9th, that "two Southern California staples that may be exported to Japan in the event of direct steamship connection between San Diego and the Orient are beans and barley. In traveling to San Diego the attention of President Asano of the new Japanese steamship company was attracted by a threshing machine in operation on the San Joaquin ranch.

"What is that?" inquired the Japanese millionaire.

"That is a threshing machine threshing barley," replied one of the gentlemen from Los Angeles who accompanied him.

On being told that this ranch alone produced over 300,000 sacks of barley this year, the better grades of which were exported to foreign countries for brewing purposes, Mr. Asano inquired as to the prices received, and said:

"Why, we would take a large quantity at those figures. Our people are acquiring the beer-drinking habit, and there are already three breweries in the country which send all the way to Germany for their malt and hops."

It struck the steamship magnate that barley might go a long way toward making up the cargoes of the steamships which he is thinking of sending to San Diego. His enthusiasm over this idea was increased on reaching San Diego by seeing a British schooner loading 60,000 sacks of barley from the San Joaquin ranch for Liverpool.

A 1000 acre bean patch on the San Joaquin ranch was also pointed out to Mr. Asano, and he grew quite interested in it. This is the first year that beans have been planted extensively on the San Joaquin and they are doing very well. The Ventura crop is also reported to be in good condition thus far, so that an immense amount of beans will probably be produced this year.

Mr. Asano said large quantities of Chinese beans are consumed at Japan. These are very small and of very inferior quality.

Mr. Asano thought it possible that California beans, owing to their superiority over Chinese beans, could be successfully introduced into Japan and become a cheap and wholesome article of food in that country. He is anxious to see the experiment tried, and if successful beans will become an important factor in the trade with Japan.

Timber for South Africa.

EASTERN TEXAS has within a year set up an important trade in timber with South Africa. This long-range trade is the outcome of the improvement of the Sabine Pass, a waterway that the United States engineers have been dredging for years. When the timber agents of Mobile, Pensacola and other Gulf ports discovered the possibilities of the timber trade through Sabine Pass they began to make contracts for timber in Southeastern Texas and to ship the product to South Africa, where the activities of a rapidly growing population in a region almost bare of trees created a demand for timber.

The timber belt of Texas is a region of about 30,000 square miles. The timber is transported partly by water, being floated down the streams, and partly by rail. Already several railway lines penetrate the timber belt, and connecting with these lines are many private tramways that lead to the sawmills. The climate is such that the lumbermen can work the year round. Negroes do most of the work at about \$1.25 a day. They are preferred by owners and overseers to white laborers, and are probably better suited to the climate.

Many hundred thousand acres of the Texan timber belt are as yet untouched by the axe, and in those parts of the region where the lumbermen are at work only the pine has been cut. Many of the trees are two feet in diameter and some are much larger. South Africa has come in very opportunely to take the place of the Cuban market. The trade is carried on chiefly by large schooners—though steamers are engaged in it. The timber land, worth from \$4 to \$6 an acre, is held by individuals and corporations in great tracts, some as large as 100,000 acres. The owners are often non-residents. The timber is used in wasteful fashion, but it is believed that the Texas forest belt will outlast the forests of Maine and even of Michigan. It is estimated that there is in the Texan timber a half century of cutting.

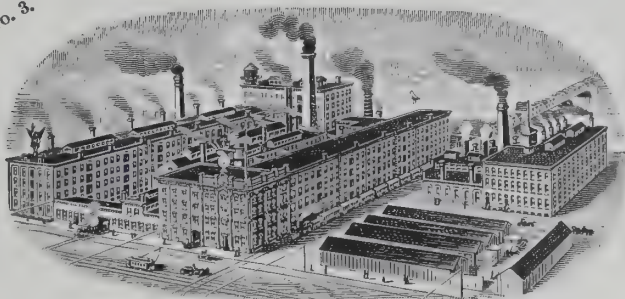
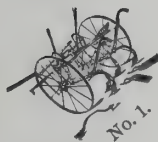
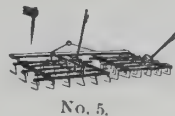
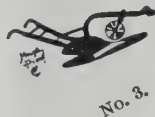
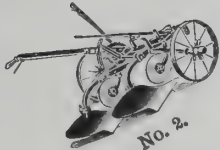
While the yellow pine of Texas is thus coming into market there is in the same region an abundance of oak and ash yet untouched. These hard woods are found along the watercourses where the pine does not grow. The oak is excellent, and it is believed that at present prices this timber could be cut profitably.

MEXICO is coming into line with most satisfactory railroad requirements, both in the shape of track material and rolling stock. Of course, the United States is favored in the contracts now closing and the result of intelligent commercial invasion is seen in other lands as well. It is said that a Pittsburg locomotive manufacturing concern has recently booked several orders from abroad amounting to some \$40,000. One of the engines ordered is for a Russian railroad, a second for Central America, two are to go to the West Indies, one to Persia and one to South Africa.

—One of the most noteworthy purchases in New Orleans was made by a wealthy resident of Bremerhaven, Germany, who cabled the Joseph Schwartz Company, Limited, to fit up for him a handsome New Orleans cabriolet, a vehicle for the sale of which the Joseph Schwartz Company, Limited, has become well known all over the world. The cabriolet has been shipped to Germany, and as it is of a beautiful finish and complete in all its appointments, it is expected to bring the enterprising New Orleans firm many orders from abroad.

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U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
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Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes, Beet Machines. Etc.No. 1 Dandy Combined Riding and Walking Cultivator.
No. 2 Wheel Walking Gang Plow, 24 inches.No. 3. Stee Beam Plow with Rolling Coulter S. B.
No. 4. Wood Beam Plow with Rolling Coulter.No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

F. O. B. NEW YORK.

Foreign Agencies:

PEABODY & CO., New York City, for Continental Europe; Messrs. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.

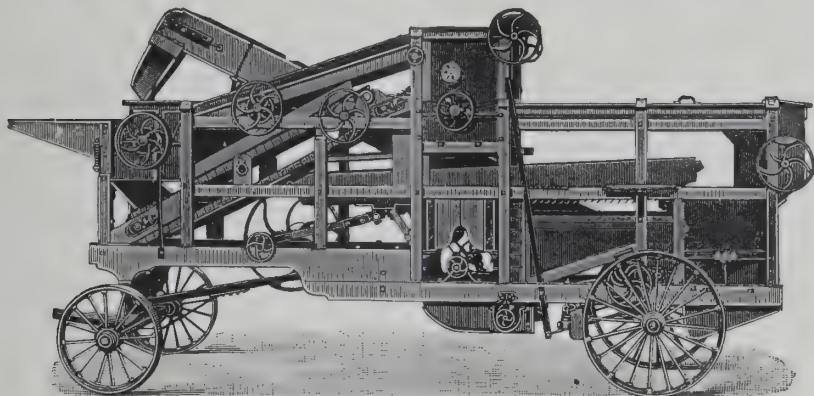
THE AULTMAN & TAYLOR MACHINERY COMPANY

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MANUFACTURERS OF

**Thrashing Machines, Saw Mills,
STATIONARY, PORTABLE AND TRACTION ENGINES,
Horse Powers,
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OF ALL KINDS AND SIZES FOR LOCOMOTIVES



Write us for DETAILS, PRICES and ANY DESIRED INFORMATION.

COFFEE MACHINERY.**The Monitor Coffee Separator and Grader**

Will make clean separations and grade in one operation.

The Monitor Coffee Milling Machine,

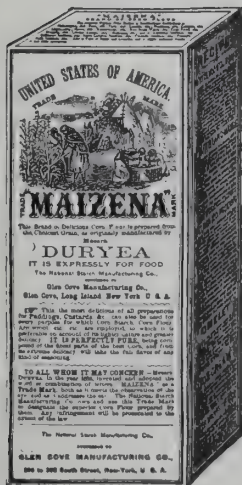
The most perfect miller for coffee ever offered. It will do the finest work on tender as well as hard coffees, and do it without waste or breakage.

These Machines are in successful operation in many of the largest Coffee Houses in this country, and are well worthy of investigation by Handlers of Coffees.

Can be bought direct from manufacturers or through any reliable exporter.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

Is SUPERIOR to "CORN STARCH," "ARROWROOT," "SAGO," Etc.

**TRADE MARK**
MAIZENA
(DURVEA.)Gold Medal Awarded
"MAIZENA."

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

ENCOMIUMS TO ITS MERITS:LONDON, 1862. "Supremely Excellent."
BRUSSELS, 1876. "Notably Excellent."
PARIS, 1887. "Perfection in Preparation."CENTENNIAL, 1876. "Notably and Absolutely Pure."
PARIS, 1878. "Best Produced of Its Class."
FRANKLIN INSTITUTE. "Superior Merit."Paris Exposition,
1889.

Put up exclusively by THE NATIONAL STARCH MFG CO., successor to (Messrs. DURVEA) GLEN COVE MANUFACTURING CO., N. Y. U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and 1/2 lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

None GENUINE without "DURVEA" appearing on the face of Package.

California Products Abroad.

THE San Francisco *Call* of August 1st says: "The invasion of Germany by high-class California wines and brandy and the sale in London at paying prices of choice California fruit are significant events, although of more value to indicate possibilities than for actual results. California as a producer of the good things of earth is fast gaining favorable recognition in all parts of the world. That the market for our products can now be extended to European points in spite of high freights and the damage and loss incidental to long-distance shipments serves to emphasize the possibilities of the future, when competing railroads will have reduced freights and improved methods of storage and packing have reduced loss in transit to a minimum.

"When the pioneer shipments of fruit to London were made, four years ago, failure was predicted, because it was thought impossible to keep any fruit in reasonably good condition for the length of time required in transportation. Those first shipments demonstrated that pears and some varieties of plums will best stand the long shipment, and if they reach the English market during July will sell at a small profit to the California grower. Financially those first shipments were not a success, but the experiment was valuable. The cost per carload for fruit from California terminals to London in 1892 was about \$1,400. Improved refrigeration methods and competition have since forced these fixed charges down to between \$700 and \$800 a carload. A box of pears, for example, weighing about 25 pounds, can now be sold in the London market at a total cost to the producer exclusive of commission for about 75 cents.

"The London market is a limited one, but the demand is growing, as the fruit is enjoyed by the English people of conservative habits but epicurean tastes. Pears that reach there during July do not come into competition with the home product, but after that time until October, when later varieties are desired, there is little or no demand. The present season, when the California fruit crop is so short that the local and Eastern demand cannot be supplied, there is no object in reaching the London market. But next season's harvest may be as abundant as this season's yield is light, and there is satisfaction in knowing that the English market is within reach.

The report from Berlin of the demand there for high class California wines, bottled and labelled, indicates a breaking down of prejudice that is gratifying. After that the local olive oil producers may be sanguine of getting orders for shipments to Italy. Except for the bar of prejudice it is really not surprising that California wines and oil should find appreciation abroad. The best wines here are made according to the most approved French and German methods from grapes grown on soil corresponding closely to that of the most famous Old World vineyards. In many instances local winemakers have served long apprenticeship abroad. In local olive oil manufacture the same practice is true. Several French and Italian experts have been engaged in the olive oil industry here for many years. The lessons of Old World experience joined with modern mechanism and American enterprise form a combination that is effective in any industry.

California Prunes and Raisins.

IN regard to the consumption of California prunes in France and Switzerland, Consul Germain, of Zurich, in a recent report says that the French packers lost considerable money owing to California competition, that the competition is formidable and growing from year to year for large sized fruits, and on this account the French packers are trying to combine in order to purchase the green fruit at cheaper prices in the hope of thus driving out the California article. As it, however, gives perfect satisfaction and is fully as good in quality and appearance there seems but slight chance of preventing its sale in France, where, moreover, it is sold as the French product. How effectively the California raisin competes with the Spanish article in this country is told in a most interesting report by Consular Agent Mertens, of Valencia, who gives statistics that show that while in 1880 the United States imported one-third of the total crop of Spanish raisins, in 1895 we imported but 59,806 quintals, or about one-tenth of the Spanish crop of that year.

American Leather in England.

BEFORE very much sympathy is wasted upon the English leather trade, says the *Shoe and Leather Review*, it would be well to consider the methods of English buyers on this side of the Atlantic. As a matter of fact there is little or no deception in the matter of brands in the United States. It happens, however, to be a fact that English buyers come to the United States with offers to buy at prices that are only accepted because the tanners see an opportunity to lower their stocks by sending some leather out of the country and by this means improving the chance of selling what remains at higher prices for domestic consumption. Having sold their leather for perhaps less than the cost of production the average American tanner would not care to stamp his name and trademark on the leather. The importer can, therefore, proceed to invent some high-sounding brand and stamp it on the sides. The deception, if there is any, consists in selling leather of well known and old-established brands at lower prices and under another name. Fortunately this method of transacting business is likely to diminish. For many years there has been a burdensome overproduction of leather, and the export outlet was regarded more as a means of relief than a source of actual profit. Since the cattle supplies have fallen off the immense surplus of leather has gradually been absorbed, and the tanners are to day not producing enough leather for home consumption if even normal business prosperity existed. The export trade in leather is likely to become more of a legitimate business. Leading houses are already selling their leather abroad under the same brands that it is sold at home.

Export of Manufactures.

WE have taken occasion several times of late months, says the *Democrat*, to advert to the fine showing that was being made from month to month in the matter of the export of manufactured goods from the United States, and to predict that, when the returns from the full commercial year ending June 30th had been compiled and published, the value of manufactured exports would be found to be greater for the fiscal year 1896 than it had ever been in any one previous year of our history.

The returns in question have now been compiled and published by the Bureau of Statistics, and the excellent showing which the individual months portended has culminated in a magnificent total for the year. The following simple table indicates in a more or less general way how our exports of manufactures have progressed since 1860—at which date almost the only manufacture which we sent abroad was mineral oil:

Year.	Exports of Manufactures—		Total Exports.
	Value.	P. C. of total.	
1860.....	\$40,345,892	12.76	\$316,242,423
1870.....	68,279,764	15.00	455,208,341
1880.....	102,856,015	12.48	823,946,353
1885.....	147,187,527	20.25	726,682,946
1890.....	151,102,376	17.87	845,293,828
1891.....	168,927,315	19.37	872,270,283
1892.....	158,510,937	15.61	1,015,732,011
1893.....	158,023,118	19.02	831,030,785
1894.....	183,728,808	21.14	869,204,937
1895.....	183,595,743	23.14	793,392,599
1896.....	228,489,893	26.47	882,519,229

In 1860, it will be observed that the value of the export of our manufactured goods alongside of the entire value of our exports was small indeed, amounting only to 12.76 per cent. or about one-eighth of the whole. In the year 1896, which closed June 30th, the value of the export of manufactures, which was anticipated to reach the high-water mark of 25 per cent. of the value of the whole export, not only reached that mark but very considerably exceeded it. The entire export for the year reached the handsome value of \$882,519,229, and the manufactured export alone was accountable for no less than \$228,489,893, or 26.47 of that sum.

Henceforward the croakers who keep vexing the public ear with an oft-reiterated and positive assurance that the American manufacturer is, and from the nature of things must be, unable to compete with the manufacturers of European countries owing to the smaller price of labor in those countries, should be fain to close their mouths and give the community a rest for a while. The reduction of duties on some of the raw materials of our manufactures made in the present tariff act gave a great fillip beyond any doubt to the ability of American manufacturers to compete with the foreigner, for that reduction of duties lessened pro tanto the cost of production, and enabled our manufacturers to place their product at smaller figures on the market.

The following table shows the growth of the export trade in specific lines of goods during the past fiscal year:

ARTICLES.	1895.	1896.
Books, maps, etc.....	\$2,316,217	\$2,338,722
Brass and manufactures.....	784,640	872,396
Carriages and street cars.....	1,514,336	1,884,658
Railway cars.....	868,378	1,002,940
Casings for sausages.....	1,581,891	1,771,680
Patent medicines.....	1,978,144	2,479,510
Clocks, parts of.....	846,676	944,538
Copper ingots.....	13,921,460	18,646,407
Manufactures of copper.....	547,243	1,073,697
Cotton Cloths—Colored.....	3,444,539	3,419,158
Uncolored.....	7,034,678	9,539,199
Other.....	3,310,593	3,879,039
Earthen and chinaware.....	141,021	149,388
Manufactures of flax, etc.....	1,722,559	1,868,601
Glassware.....	946,381	1,062,224
Cartridge.....	1,174,396	1,256,436
Manufactures of rubber.....	1,505,142	1,858,556
Electric and scientific apparatus.....	1,912,771	2,522,217
Builders' hardware.....	2,483,666	3,311,738
Machinery.....	11,493,093	14,853,221
Saws and tools.....	1,984,612	2,197,450
Sewing machines.....	2,260,139	3,139,249
Iron and steel wire.....	1,277,479	1,506,885
Boots and shoes.....	1,010,228	1,436,686
Malt liquors.....	558,770	659,875
Musical instruments.....	1,115,727	1,271,161
Mineral illuminating oils.....	34,706,844	48,630,920
Lubricating oils.....	5,867,477	6,556,775
Paints and colors.....	729,706	880,841
Paper and manufactures.....	2,185,109	2,715,375
Soap.....	1,092,126	1,278,645
Rum.....	1,134,965	1,174,093
Manufactures of tobacco.....	3,953,165	4,380,361
House furniture.....	3,047,212	3,261,209

—American shoes are becoming a fad and a fashion in England, Germany and other European countries, and a bright prospect is opened to this great home industry. The foreigners may be able to undersell those manufacturers on this side of the ocean, but thus far they have utterly failed in making shoes that give the same comfort. This fact will be borne out by visitors to Europe, who agree that they can get there almost all kinds of wearing apparel as good as, and in many cases better than, can be had in this country, with the notable exception of shoes. The American shoe should be worn everywhere, and it may be that the day will come when it will make its imprint on the burning sands of the Sahara and the frozen snows of Siberia.—*Troy Times*.

THE BLACK MFG. CO., - ERIE, PA., U. S. A.

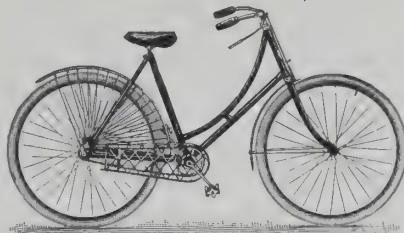
We build bicycles of the finest quality only and have nothing to offer either in cheap or medium grade wheels. Our discount for export is 30 per cent., and we deliver machines properly boxed f. o. b. New York. Order through your commission house and send copy of order direct to us.



TRIBUNE MODEL 27.
Price \$100. Weight 23½ lbs.

This is our standard men's wheel and is suitable for all kinds of road use. It is built in three heights of frames, 22½, 24 or 26½. The wheels are 28 inches diameter; 26 inches will be furnished if preferred. Gear, 68; options, 60, 63, 72, 73 or 80; cranks, 6½ inches, 7 inches if preferred. If not otherwise specified, all machines will be fitted with Hartford or Morgan & Wright tires. All wheels are supplied with tool bag, tools and repair kit. Regular finish, black enamel, nickel trimmings. If a lighter wheel than the above is desired, order should specify Model 21, which will weigh with light road equipment about 20½ lbs.

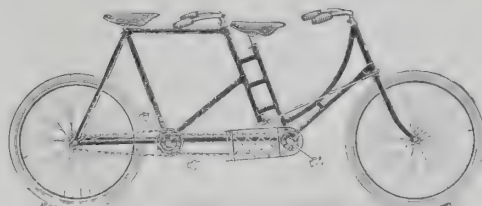
Tribune Bicycles.



TRIBUNE MODEL 24. Price \$100.

Our ladies' wheels are built in three heights of frames, 20½, 22½ or 24 inches. 20½ inches is standard and will be shipped if not otherwise specified. Wheels, 28 inches, can be furnished, with 26 if preferred. Regular gear, 63; options, 56, 60, 68 or 72; cranks, 6 inches throw. The weight is about 24 lbs.

The Celebrated
Cycloidal
Sprocket.  Used on
Tribune
Bicycles only.



TRIBUNE MODEL 23.
Price \$150. Weight 44 lbs.

Our tandems are also built with double diamond frame for use of men riders. Wheels are 28 inches; height of frame, 24 inches; ladies' forward frame, 20½ inches. Gear, 68; can fit with 72, 76 or 80, if desired.

"BEACON" X-RAY TUBES!

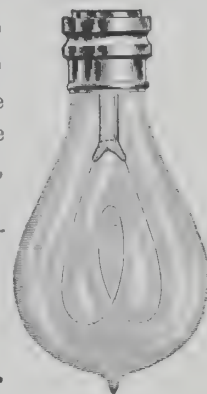


We make tubes of all the different designs, and as we test each tube before it leaves the factory, we can guarantee them to be first quality in every respect, and unexcelled by any tubes made.

"BEACON" LAMPS!

We manufacture a full line of standard and miniature incandescent lamps, ½ to 300 c. p., for all systems. We can guarantee them to be of the highest possible grade, and to give undoubted satisfaction in service.

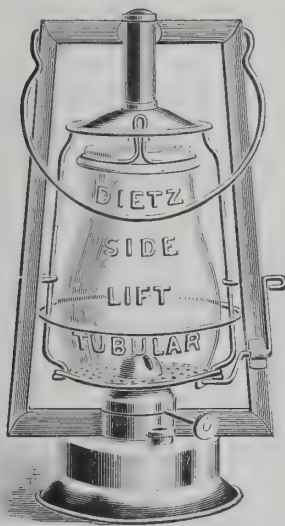
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SIDE LIFT OR VICTOR.

THE DIETZ "Victor" Lantern

Is built for use, and for the abuse that goes with it. It has an oil-pot drawn from tinned sheet steel and then re-tinned—a method of construction that prolongs its life. It also has a remarkably simple and effective device for raising the globe to light or trim, which device also firmly holds the globe and burner in place. The burner, which is hinged to prevent its wandering, is the best of its kind, as is also the globe furnished with the Victor Lantern. The Victor is only one of an endless variety of Lanterns that we build. Your commission agent can furnish the DIETZ LANTERNS if he will—if he gives you the very best made, he must. The list price of the Victor Lanterns is \$7.50 per doz. and the export discount 50 per cent.

R. E. DIETZ COMPANY

Established in 1840.

60 Laight St., New York, U. S. A.

For the asking we mail our catalogue and price list (Spanish and English).



THOROUGHLY RELIABLE AND PERFECTLY AUTOMATIC
Designed especially for
STATIONARY, PORTABLE
TRACTION AND HOISTING
ENGINES, TUG BOATS, ETC.

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Restarts instantly after a temporary interruption of the steam or water supply.

It has a wide range of capacities, and raises the water promptly with hot or cold pipes.

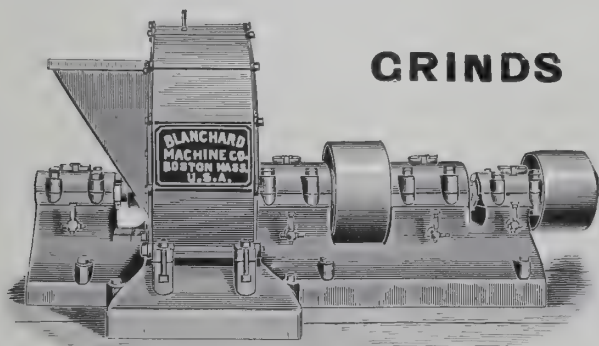
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Selling Agents,

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GRINDS

Bones, Tankage,
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DRY or DAMP.

Large capacity.
No skilled attendants
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SIMPLE. STRONG. COMPACT.

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For the Dry Goods, Cloak
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Will show a full and correct
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Oak, with nickel trimmings
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Price, **\$31.00.**

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in the United States East of
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Our Export Trade.

A LONDON correspondent calls attention to the growing importance of this country's export trade with England. Not only are American hardware, machinery and agricultural implements coming more and more into use in England, the home of machinery, but even the raw material, in the shape of pig iron, is beginning to be sent, and it is expected that England will take American coal as soon as the present wasteful system of mining is so far corrected as to reduce the cost a little more.

But this is foreign to the correspondent's point, which is that American products are at once so much better and cheaper than the English that they are displacing the latter in their own markets. Why this should be so is a question for the political economist to study; but the fact is one for the business man to take advantage of.

If American products can be sold in England they can be sold to the other countries to which England sells, and thus the market for the products of American labor must widen and increase continually.

Taking the increase for the last 10 years only, the figures are sufficiently striking. In that time there has been a gain of \$88,000,000 in annual value, and an advance from 19½ to 25 per cent. in the proportion which this class of exports bears to the whole.

This increase in the value of the exports of our domestic manufactures during the past 10 years is all the more remarkable since it occurred during a period in which the value of the same class of exports by the chief commercial nations has shown a decrease.

The value of the 10 chief articles of British exports declined from \$725,000,000 in 1884 to \$705,000,000 in 1894. The value of the foreign trade of France was 9 per cent. and that of Germany 27 per cent. less in 1894 than in 1884.

It is mainly due to the increased value of our domestic manufactures sold abroad that our exports of all classes of merchandise have, in spite of the decreased value of the products of agriculture, so well held their own. It is significant of the place that the United States is destined to take in the world's supply of mechanical equipment that the total exports of the manufactures of iron and steel have increased from \$31,500,000 in the fiscal year 1895 to over \$40,000,000 in the fiscal year 1896.

Our Exports for June.

THE exports of domestic merchandise for the month of June, 1896, as compared with those for the same month of 1895 were as follows:

	1895.	1896.
Agricultural implements.....	\$450,258	\$49,152
Animals.....	2,643,504	4,067,142
Art works.....	39,870	50,684
Bark, extract of for tanning.....	41,095	25,408
Blacking.....	38,642	47,464
Bones, hoofs, horns, etc.....	13,711	31,204
Books, maps and printed matter.....	173,614	181,962
Brass and manufactures of.....	94,265	95,218
Breadstuffs—		
Barley.....	35,065	383,700
Bread and biscuits.....	53,754	42,081
Corn.....	1,732,112	2,463,904
Corn meal.....	60,061	45,882
Oats.....	15,101	1,218,167
Oat meal.....	63,901	58,317
Rye and rye flour.....	365	166,096
Wheat.....	3,058,814	4,312,454
Wheat flour.....	4,063,558	3,540,191
All other breadstuffs.....	14,654	213,793
Bricks.....	17,233	9,555
Broom corn.....	11,839	9,086
Brooms and brushes.....	15,348	17,526
Candles.....	21,211	19,197
Carriages and cars.....	161,407	232,867
Casings for sausages.....	90,614	127,716
Chemicals, drugs, dyes and medicines.....	635,996	718,970
Clocks and watches.....	108,022	157,338
Coal.....	1,083,081	1,259,103
Coke.....	26,578	35,367
Coffee and cocoa.....	8,259	7,547
Copper ore.....	249,396	224,563
Manufactures of.....	1,572,104	2,335,908
Cotton—Unmanufactured.....	5,574,307	5,211,001
Manufactures of.....	1,242,286	2,095,787
Cycles and parts of.....		515,798
Earthen, stone and chinaware.....	12,799	20,414
Eggs.....	1,551	2,769
Fertilizers.....	575,381	273,986
Fish.....	167,659	124,237
Flax, hemp and jute manufactures of.....	137,294	166,093
Fruit and nuts.....	215,868	242,160
Furs and fur skins.....	108,100	183,226
Glass and glassware.....	96,738	82,890
Glucose, or grape sugar.....	298,564	174,914
Glue.....	7,345	10,962
Grease and soap stock.....	89,507	135,133
Gunpowder, etc.....	100,691	128,235
Hair and manufactures of.....	56,541	30,826
Hay.....	52,536	73,709
Hides and skins.....	106,636	216,829
Honey.....	15,187	1,538
Hops.....	50,356	24,871
Ice.....	2,323	7,559
India rubber and manufactures of.....	104,780	153,737
Ink, printers' and other.....	15,425	9,058

	1895.	1896.
Instruments and apparatus for scientific purposes.....	193,874	203,429
Iron and steel and manufactures of.....	2,924,331	3,821,744
Jewelry.....	41,892	44,776
Lamps, etc.....	55,316	57,855
Lead and manufactures of.....	13,930	56,606
Leather and manufactures of.....	1,175,363	1,940,391
Lime and cement.....	9,722	6,205
Malt liquors.....	52,244	59,913
Marble, stone and manufactures of.....	91,152	100,459
Matches.....	7,293	3,789
Musical instruments.....	77,055	86,274
Naval stores.....	823,267	978,728
Nickel, etc.....	18,993	9,481
Oilcake and meal.....	715,346	481,171
Oils—Animal.....	41,500	46,173
Mineral, crude.....	728,285	339,074
Refined or manufactured.....	4,253,307	5,000,026
Vegetable.....	525,460	557,252
Paints and colors.....	63,471	83,932
Paper and manufactures of.....	202,314	247,484
Paraffine and wax.....	261,923	264,202
Perfumery, etc.....	36,545	27,125
Platedware.....	21,861	37,144
Provisions—		
Beef products.....	1,775,012	3,065,211
Hog products.....	6,219,104	7,005,669
Other meat products.....	895,294	768,073
Dairy products.....	651,286	663,094
Quicksilver.....	14,327	49,577
Rice bran and meal.....	1,464	7,600
Seeds.....	11,730	67,372
Silk, manufactures of.....	16,169	27,792
Soap.....	145,742	105,777
Spermaceti.....	3,017	6,161
Spirits, distilled.....	45,243	159,571
Starch.....	68,694	81,071
Stationery, except paper.....	59,345	65,000
Stereotype and electrotype plates.....	3,187	6,237
Straw and manufactures of.....	16,850	12,848
Sugar and molasses.....	153,549	101,701
Tin, manufactures of.....	20,853	25,090
Tobacco, unmanufactured.....	1,858,769	1,320,934
Manufactured.....	373,786	400,970
Vegetables.....	129,846	131,605
Wood and manufactures of.....	2,844,068	3,099,723
All other articles.....	542,008	823,071

Total value of exports of domestic merchandise . \$53,738,093 \$96,928,447

FOREIGN EXPORTS.

Total value of exports of foreign merchandise... \$1,229,737 \$1,777,424

Central American Exposition.

THERE will be opened in Guatemala City on March 15, 1897, an exposition to be known as the Central American Exposition, and which will be continued until July 15, 1897.

All United States manufacturers and merchants are cordially invited to exhibit their products, manufactures, objects of art, industries, machinery, etc., etc. Space for exhibiting purposes may be obtained by addressing the "Central Committee of the Exposition, Guatemala City, Guatemala," application to be made before August 31, 1896. All exhibits to be marked "Exposition Centro-Americana, Guatemala." No duties will be levied on goods intended for exhibition; the committee attending to their dispatch at the custom houses of Guatemala, and giving receipt for same, holding itself liable for those goods which arrive in good condition, but not for such as may suffer damage or impairment during the exposition.

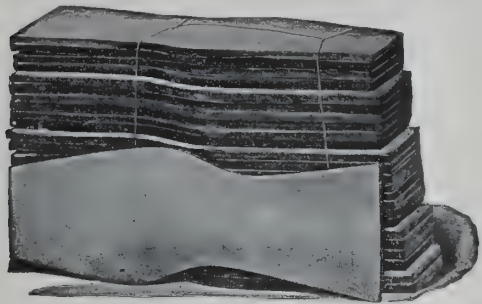
All goods exhibited remain the property of the exhibitors but can only be retaken at the close of the exposition, those thereat manufactured may be sold or given away without being liable to the payment of duty.

The exposition is intended to embrace the following branches: Science and Literature, Education and Teaching, Fine Arts, Mechanics and Constructions, Agriculture, Horticulture, Arboriculture and Special Cultivations, Fauna and Floral, Ornamental Industries and all kinds of Industries, Natural Products, Transportation, Mining and Immigration.

Exhibits awarded premium may be sold in Guatemala without liability to customs duties; those not awarded premium will be considered as goods in transit, and must be reshipped, or if sold, pay such duties as apply to such merchandise.

Any information desired will be cheerfully given upon application to the office of the Consul General, Dr. Joaquin Yela, 4 Stone street, New York.

—A bulletin of the St. Louis Spanish Club announces the reduction of import duties in Mexico, to take effect July 1, 1896. By a recent act of the National Congress of Mexico on and after the date named all interstate and inter-municipal taxes are to be abolished throughout the republic. This reform in the import tariff is said to be the most important one in fiscal matters in Mexico for half a century, placing Mexico abreast of the most modern countries in her tariff system, and removing at one stroke some formidable obstacles to the free movement of trade throughout the Republic. This is saying a great deal and means more to the American merchant trading with Mexico. Merchandise, after passing the ports of entry, will have a much freer movement now the old disadvantages and hindrances are practically put out of the way. It is an opportunity for the American exporter not to be overlooked or held too cheap.



American shoemakers and shoe-menders have got ahead of you. They don't buy whole sides of sole-leather now.

A shoemaker wants 2 or 3 grades and 4 or 5 thicknesses.

We cut sides, make 8 grades and 15 thicknesses, sell the cobbler the grades he wants, and the rest, including the waste, to somebody else, who wants that.

All well served; no waste; no using leather because you've got it.

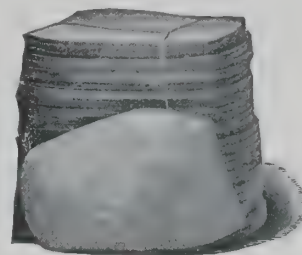
We do this business better than anybody else—it is a close wholesale business.

Do you want to know about it?

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ST. PETERSBURG, Puschkinskaja 7.
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(Signed) HIRAM BUCKINGHAM, Custodian.

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Active, responsible **DEALERS DESIRED** in all open foreign cities.

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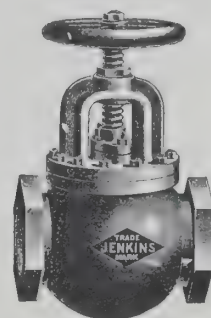


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Are manufactured of best steam metal, and are suitable for any pressures of Steam, Oils or Gases. Contain Keyed Stuffing-Box and Disc Removing Lock-Nut, making them the easiest and cheapest to keep in repair. The Jenkins Discs used in these Valves are manufactured to stand High Pressure Steam. Warranted as represented. None genuine without Trade Mark. Send for Catalogue.

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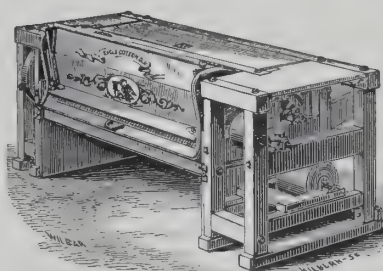


EAGLE COTTON GINS.

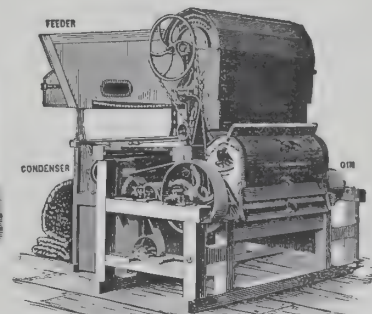
These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details, illustrated Catalogues will be furnished on application.

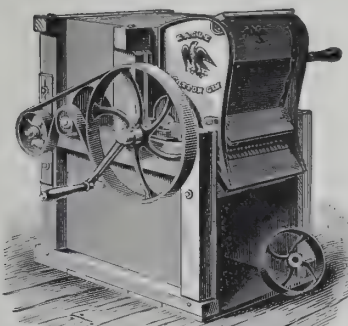
Eagle Cotton Gin Co. { FORMERLY Bates, Hyde & Co. } Bridgewater, Mass.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.



OUR FOUNTAIN PENS

On receipt of \$10 we will send a sample line at export prices.

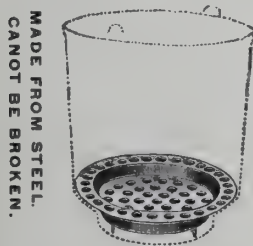


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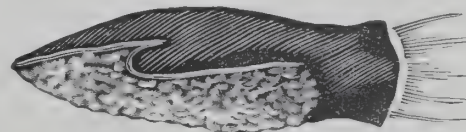
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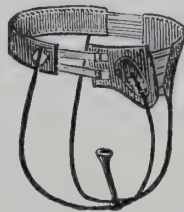
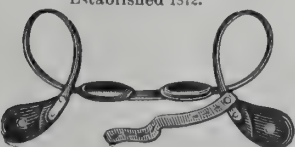
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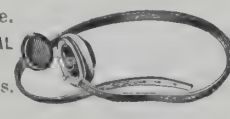
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American Bicycles in Europe.

ACCORDING to consular reports to the State Department says the Newark *News*, the American bicycle has already begun to attract in Europe the attention due to its merits as the lightest and most picturesque form of conveyance which the most inventive people on earth have been able to devise. Not only are the American models generally approved as superior to the European article, but, what is more to the point, the fashion of buying American bicycles is becoming established wherever the devotees of the wheel are to be found on the Continent. In the larger German cities several makes of American wheels are already well known, and are kept before the public by a liberal system of advertising and the efforts of agents whose business it is to bring the machine to the personal attention of dealers.

Consul Mason, the official representative of the United States at Frankfort, who is himself an expert and enthusiastic wheelman, has forwarded some interesting information in regard to the development of this promising branch of export trade with Germany. It is scarcely more than promising as yet, although the demand for American machines has been clearly denoted, and with judicious nursing may be made permanent. Exact statistics of the increase of this branch of export traffic are lacking, since shipments of bicycles from American ports are placed by the custom house officials under the general classification of "carriages, cars, etc." Separate entries of such shipments would afford a ready and accurate means of determining the extent to which the European market had been invaded by our progressive and enterprising manufacturers.

Not only in Germany, but also in Spain, Italy, Switzerland and Greece, the consular representatives of the United States report an increasing popular interest in the products of American bicycle makers. It is generally conceded that these wheels are lighter, run easier and are more graceful in design than those constructed in European factories; while the factor of strength which is sufficient for use on American roads is, of course, amply adequate in countries where the highways are usually kept like park boulevards. In addition, it may be noted that prices of the heavier and clumsier European wheels are practically the same as the charge in this country for machines of domestic manufacture.

The apparent ability of American bicycle manufacturers to compete in Europe on equal terms with the home product, notwithstanding the drawbacks of higher wages and heavier freight charges, finds a partial explanation in the report of Consul Parker at Birmingham, on the steel tubing industry which is substantially centralized at that point. During the period of profound depression in 1894, Consul Parker says the American manufacturers largely took advantage of the situation to contract with steel tubing manufacturers for their full output for many months in advance at very low prices. The steel industry has greatly revived since then, and prices have materially advanced, but the shrewd Americans have been enabled to secure tubing at a rate scarcely covering the cost of manufacture, while the English and German makers have been forced to pay much higher prices. Another material advantage is in a recent decision of the Treasury Department at Washington, under the terms of which the tubular steel ingots brought from Birmingham and Essex are admitted as steel ingots at a low rate of duty, and not, as formerly, as steel tubing, on which a duty of 25 per cent. is levied.

To draw thus upon Europe for raw material, and send it back for sale as a finished product, is an industrial achievement in every way creditable to American ingenuity and enterprise.

America's Chances Abroad.

"WHEELING" thus honestly faces the question of the American invasion of the British market: "One point which has largely handicapped American machines in England this year has been the cemented-on tire and wood rim, which, being the rage across the Atlantic, American makers naturally conceived would be acceptable here. This has not proved a drawback on the Continent for some reason, and apparently Continental cyclists are quite content to ride cemented-on tires and wood rims, if two or three pounds in weight are saved and a similar sum in price.

"It seems to us that American machines are fast becoming more popular on the Continent than the English-built article. We do not say this with any sense of satisfaction or comfort. It is a confession wrung from us by evidences of our eyes and ears, and if English makers are to regain their European trade they will have to make similar deviations in pattern to those which American makers are finding necessary to secure a permanent English trade.

"The question of price is also one to be faced. American-made bicycles undersell English machines on the Continent, partly because the latter have so many more fittings than the American, and partly because the American bicycle primarily costs less to produce."

A FEW years ago there was not an American wheel shipped to foreign countries. Now there are thousands shipped every year and the trade is increasing tremendously. Americans who make foreign wheeling trips almost invariably take their own wheels with them. They are stronger and lighter. American manufacturers are filling orders in Australia, in Africa, in South America and even in the Cannibal Islands. One famous American manufacturer recently was obliged to refuse an order from Moscow for 30 wheels, having already many more orders than he could fill.

—The Fowler Radiator Company, Johnstown, Pa., made a car load shipment of its goods a few days ago to London. The company has an inquiry from Antwerp, Belgium, on which it believes it will obtain an order for even a larger shipment than this one to England.

Rubber Shoes for Horses.

THE latest novelty in the horse goods line is a horseshoe or boot made entirely of rubber, and it is the invention of the Kansas City veterinary surgeon, Dr. Joseph Hirsch, who is one of the leading veterinaries of the West. He has made a specialty of the horse's foot, and his study of the hoof has resulted in many radical changes in the shoeing of horses. His observations have led to the introduction of many improvements that have been adopted by Kansas City's expert farriers, but the rubber shoe, which is simplicity itself, promises to make him famous the world over, and particularly where asphalt pavement is in use. This rubber shoe has many advantageous features, and Dr. Hirsch claims that it is not only specially adapted for the city horse that slips and slides on the asphalt, but that it has a beneficial effect on the general health of the horse's hoof and can be used to advantage on the track, where the firm footing that it gives will produce greater speed with less strain on the horse.

Dr. Hirsch has always held that every nail that penetrates the horse's hoof deflects the hairlike tubes of which it is composed, consequently the rubber shoe, which fits the hoof like a glove, protects the foot in such a natural manner that the horn is preserved without the use of a single nail. It is made of pure rubber and fits over the entire hoof, being laced up in front like a shoe on the human foot, and the ground surface being heavily corrugated prevents absolutely any slipping or sliding, even if the pavement be coated with ice or snow. The toe of the shoe is so constructed that where the heaviest wear comes it can be readily replaced. The new shoe is not yet on the market, but arrangements have been made with an Akron, O., rubber firm to manufacture them, and Dr. Hirsch will leave for that point shortly to personally superintend the work. Dr. Hirsch is satisfied that the shoe will be a success and come into general use in every large city where asphalt pavement is used.

Another advantage of the rubber shoe over the ordinary iron shoe is that it may be taken off when the animal is in the barn, giving the hoof every opportunity for rest, cooling and natural expansion, and as they can be put on or taken off in less than two minutes the operation of shoeing works little inconvenience. The shoe has been thoroughly tested, a set of shoes worn by C. F. Holmes's mare for about a month past showing but little wear. She has been driven steadily every day, and a reporter for the *Star* was recently given a ride behind her at a racing gait over several asphalt streets. The mare went a merry clip and never once slipped or made a misstep, and, as the inventor said, the speed could be produced without any unnecessary jar or jolt or any apparent pounding or injury to the hoof. Dr. Hirsch is also of the opinion that the shoe will revolutionize the shoeing of track horses, both trotters and gallopers, and predicts that they will eventually supplant the iron or steel shoe, both for racing and city use. The appearance of the invention on the foot is not at all clumsy and as the rubber can be made to correspond nearly in color to the natural hoof it would be scarcely noticed, excepting that the sharp metallic ring of the iron hoof on the hard asphalt or brick pavement is missing.

Low Export Prices Explained.

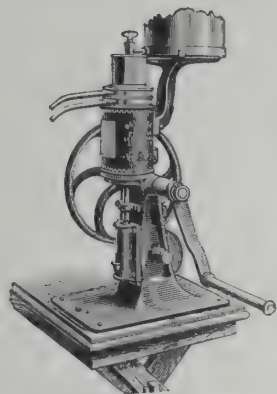
AS manufacturing capacity increases to a surplus point beyond home consumption the product is necessarily forced into other markets. When home prices have to be maintained, and competition avoided as much as possible, it becomes a part of trade policy to export goods at less than home prices. In some lines this is done at a loss so far as the foreign side of the slate goes. The home consumer, however, foots the loss by the higher prices he has to pay. Meanwhile producing plants are kept busy, wages are high and a footing gained in foreign markets. To this point the illusion is complete. The balloon, however, is destined to collapse when the exports in any specific time attain a magnitude where selling at a loss involves financial disaster. Much of the mystery attending the cheapness of exported articles is explained in the fact that there is sometimes enough profits on home marketed goods to practically dump the surplus of products on foreign markets at less than cost price.

THE Americans have invaded the home, the birthplace of the bicycle, and carried off honors and gold. When they could do this it awakened them to a realization of the fact that they were overlooking a home market, as it were, and giving up the trade in Central and South American countries to manufacturers whom they could compete with in their own native land. This awakening means much to American manufacturers, and even more to American mechanics. It means that in the future American goods will be found in the markets of the world where before they were unknown.

—The American bicycle is the superior of English-made wheels in every particular, being lighter, better constructed, easier to handle and more readily adjusted. There is nothing remarkable about this fact except that it differs very radically from the generally accepted idea of the superiority of English-made goods which obtain in some circles.

—French manufacturers are apprehensive over the anticipated invasion of American bicycles, and from the feverish haste with which the Chamber of Deputies has been asked for protection it is inferred that the foreign manufacturers, indeed, fear a comparison of their makes of bicycles and those which are evolved in this country. This season has seen exports of thousands of wheels for foreign ports, but it will not be a marker to the wheels America will send away next season. There is a craze spreading for American bicycles that takes the form of a stampede, and several American makers contemplate establishing branch factories in Paris.

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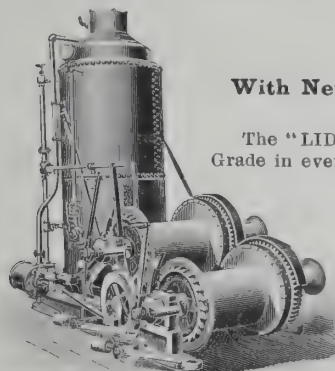
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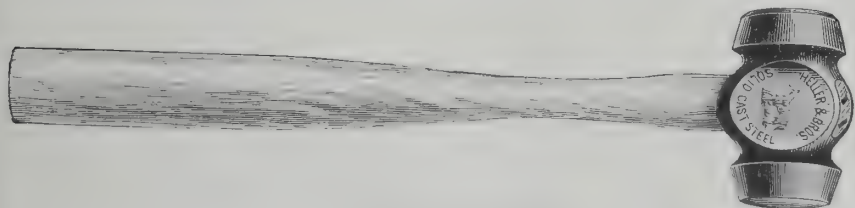
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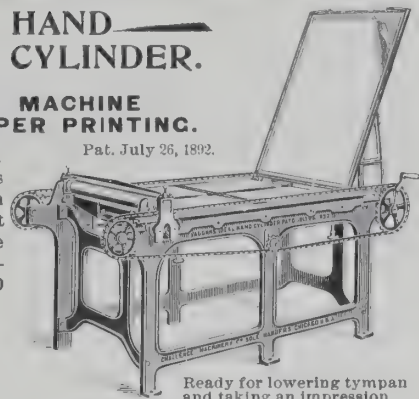
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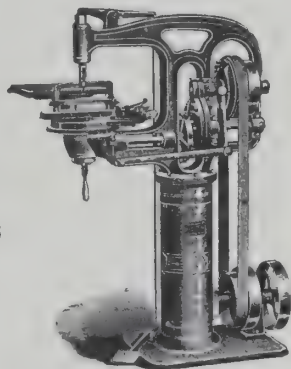
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American Goods Considered Superior.

THE United States Consular Agent at Fürth, Bavaria, in his official report says that the Germans unquestionably admit the superiority of American manufactures and workmanship, and they pattern after them whenever possible. They have American dentists; stoves made after the American plan which they call American stoves; American fashion plates in their tailor shops, and many of the toys are made after American samples.

The word American attached to anything is intended to convey the idea of superiority, and yet exceedingly few American goods are sold there, simply because no effective effort is made to introduce them.

After instancing the enormous difference in the prices of furniture in the two countries and the worthlessness of German cabinetmaking as indicating a splendid market for American woodwork, he says the Bavarian still reaps his grain with the old-time sickle; uses the heavy, unhandy grubbing hoe to till his potatoes, and turns up the soil with an implement so heavy and clumsy that it requires wheels to get it over the ground. Light, well-made, cheap American implements would, he thinks, easily replace these.

The manner of driving piles in Germany would make an American contractor smile. A simple block-and-fall arrangement is rigged up over the pile and to the end of the rope running over the pulley and fastened to the weight are attached about 25 smaller ropes with handles which are grabbed by 25 men, who at a signal all pull together. The weight goes about two feet when the men relax their muscles and the weight drops. In the erection of buildings the same tedious process is employed, and for every stone to be raised a pair of horses and about 15 men tug at the ropes.

The German boots and shoes are much inferior to the American. They lack the style and quality and are higher in price.

"The great difficulty with American manufacturers and dealers," the report concludes, "is that they waste their time shouting for a home market when there is no home market, and can never be so long as the supply so greatly exceeds the demand. The markets they want are here and elsewhere in the world and are not so hard to find if they would only take the time to hunt them up."

Exports from Lowell Cotton Mills.

THE export trade is nearly the whole business with the Lowell (Mass., U.S.A.) cotton mills at the present time. As has been told before in this column, the goods go mainly to China and other Eastern countries and to South American countries. Africa also receives some of these goods.

Almost none of the actual business of buying and selling is done in this city. The Massachusetts, Boot and Tremont & Suffolk are represented in Boston by one firm, who also act as a selling house for half a dozen or more of the other large manufacturing concerns in different parts of New England. The orders for goods all come through this house. Once received an order is filled as quickly as possible. The goods are manufactured and shipped directly to the country designated. Goods for Chicago go by way of Vancouver, reaching their destination with only one transfer, that from the freight cars sent through from Lowell, to the vessel on the Pacific coast. Goods from South America go by way of New York to a great extent.

In the mill packing houses all goods are made ready for shipment. The cloth is sent in various lengths and in different sized bales according to the demand. Standard sheeting for the China trade goes in 40-yard lengths, a whole bale containing 800 yards or 20 lengths. These weigh about 275 pounds. Other goods are sent out in 25-yard lengths, with 600 yards in the bale.

For the South American trade many of the bales, though themselves of large size, are made up of small packages, each containing only a few lengths of material. Each of these packages is distinctly separate in itself and carefully wrapped to give protection. In this way the material passes the Custom House officers without inspection and the freight charges are much less. When the seaport place to which shipment is made is reached the bales are opened and the packages can be thrown upon mules and conveyed to places inland.

The orders for goods come from South American houses to brokers in New York. They in turn send in the orders to the selling house in Boston and the notification then comes to the mills. Payments are made to the treasurers in Boston.—*Citizen, Lowell, Mass.*

An Immense Clock.

ONE of the largest clocks in the world has just been completed and put in motion in the tower of the new Hennepin County Court House in Minneapolis, Minn. The tower itself rises 365 feet above the ground, and the clock is located in its top, surmounted only by the belfry, in which hangs the peal of 10 bells. The clock has four dials, each 24 feet and 4 inches in diameter. The hands, which are broad, oar-like pieces of wood, sheathed with copper, are each 11 feet 8 inches in length.

—Fourteen soldiers in one regiment have died from eating German pork. This is a result of driving American pork from the German market. The demand for pork has caused the German farmers and butchers to conspire to sell diseased meats.

—The United States Consul at Batavia, Java, has informed the State Department that the export duty of 6 cents for 100 kilograms on sugar, abolished June 1, 1895, was restored June 1, 1896. About one-fifth of the sugars imported into the United States come from the East Indies, Batavia being the heaviest shipping point.

Hints to Manufacturers.

WITH the opening of new trade with foreign communities the American machinery builder is beginning to learn the ways and preferences of a class of buyers who are willing to pay a large profit, but who insist on having it cover perfect delivery in every way. It has been frequently remarked on in these columns that the American way of packing goods, scheduling them and providing explicit directions as to adjustment and use, had much to do with superseding the clumsy methods of European sellers in such markets as Australia and South Africa. Barb wire and hardware specialties were notable in favor on this account. In heavy machinery too much care cannot be taken in catering to foreign buyers, especially where far-off purchasers have to be reached by roundabout routes, and the careful shipper eventually secures the bulk of trade. In the case of an engine, the same should be fixed to heavy skids, and what is practically a substantial house built around it, strong and secure against all possible battering of a long voyage and rough handling. Flimsy timbering will not do, for the engine is almost certain to suffer in transit. A lost governor means the loss of the shipper's reputation likewise; a battered and broken machine unaccompanied by adjustment directions, in a shape where the duplication of missing parts means a half-round-the-world search, is to the new customer sufficient evidence of the unreliability of the seller. These new foreign buyers are willing to pay the highest price for what they want, but United States export machinery builders must always bear in mind that packing directions must involve something more substantial than a sheet of brown paper and bit of string.—*Journal of Commerce, of Chicago.*

Our Consular Service.

"THE consular service is the practical and business side of our foreign intercourse," writes ex-President Harrison in July *Ladies' Home Journal*. "There are more than 1,200 persons in the consular service of the United States. These are located in the important commercial cities and towns of the world, and are described generally as consuls general, consuls, commercial agents, interpreters, marshals and clerks. The duties of a consul are various and multifarious. He is the protector and guardian of American commerce; provides for destitute American sailors and sends them home; he takes charge of the effects of American citizens dying in his jurisdiction, having no legal representative; he receives the declarations or protests of our citizens in any matter affecting their rights; he keeps a record of the arrival and departure of American ships and of their cargoes, and looks after vessels wrecked; he reports any new inventions or improvements in manufacturing processes that he may observe, and all useful information relating to manufactures, population, scientific discoveries, or progress in the useful arts, and all events or facts that may affect United States, and authenticates invoices and statements of the market value of merchandise to be shipped to the United States. Every consulate is a commercial outpost, and if the service could be given permanence of tenure, and a corps of men of competent equipment, it would become a powerful agency in extending our commerce."

Trade with Central America.

THE trade of the United States with Central America bids fair to be greatly stimulated by the Guatemala industrial exposition next year. This enterprise will afford the first chance that Central America has had to show the world its immense wealth of tropical products and raw material, and at the same time foreigners will have an opportunity to introduce new lines of manufactures throughout the five republics. American machinery in general, engines, agricultural implements, bicycles, carriages and wagons, as well as groceries, are holding their own against European makes. A letter from Guatemala says that a large Chicago packing house has secured a grant of excellent grazing land in the southern department of Guatemala, and a large cattle ranch will be the result. The Ministro de Fomento lately asked Congress to vote \$400,000 to be devoted to irrigation, plans for a series of colonies along the new Northern railroad having been formed. Prices of American building materials, lumber, canned goods, kerosene and provisions have gone up considerably in the last few weeks, owing to the expected influx of visitors to the exposition and the need of new hotels, dwellings, etc.

American Carpets for an Empress.

THE Empress of Russia recently ordered 5,000 yards of carpets to be made by the Smith & Sons' Carpet Company, Yonkers, N. Y. These carpets have been made and were shipped from New York on July, 18th, by S.S. Persia, which will reach St. Petersburg in about one month from that date. The carpets selected by the Empress are moquettes and axminster fabrics and embody the highest art in carpet weaving. The groundwork of the fabrics is made of rich green, blue and crimson, and the designs are intricate. The samples exhibited at W. & J. Sloane's big store attracted much attention. Mr. W. W. Law, vice-president of the firm said: "I consider this selection of our goods as a triumph of American industry. From all over Europe bids were made to supply these carpets, and our goods won on their merits. The Russians thoroughly understand the refinements of life, and there is no better judge of all that is luxurious than the Empress of Russia. We have not made any extra endeavors in weaving these carpets. They are simply first-class goods, such as we make and handle only."

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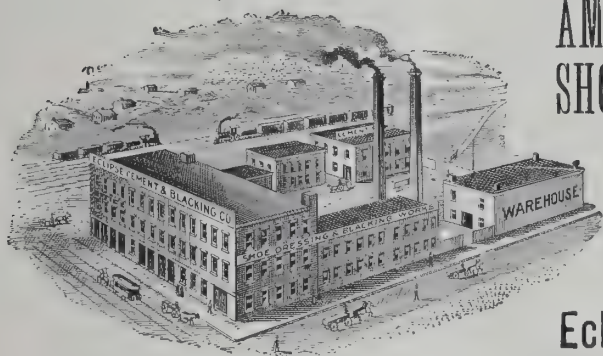
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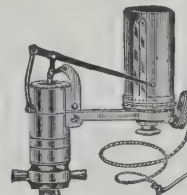
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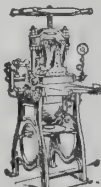


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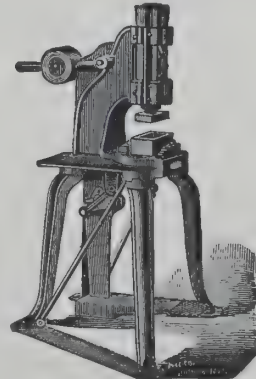
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Lifting Water by Admixture with Air.

THE plan of pumping, or rather lifting, water by admitting compressed air to the base of the pipe in which it is contained, has been growing in favor. We quote from *The Scientific Machinist* (Cleveland) an account of its workings at Bloomington, Ill., where it has been in successful operation for several months:

"Lifting water by means of compressed air is one of the new things in engineering, and judging from the success of the trial in Bloomington, Ill., this method will become a factor in the supply of water from deep wells. The water supply of that town is procured from wells 145 feet deep, the pipe being from 6 to 8 inches in diameter. Up to a recent date the water was drawn by means of old-style deep-well pumps, but about a year ago the city engineer advocated experiments with compressed air, for the pumps were expensive to maintain and the coal consumption high. After a trial of a small air-lift plant the authorities decided to discard the pump system and install an air-lift plant of sufficient capacity to supply the town."

The machinery for compressing the air is described as follows:

"The air cylinders are of the latest mechanical design, . . . the free air being taken in through a shaft from the outside of the building, and from a point which is the most favorable for dryness, reduced temperature and freedom from dust and other foreign matter. The admission of the air being through a single tube it creates a constant flow of air in one direction only, thus filling the cylinder at each stroke with air at atmospheric pressure. This movement gives a momentum to the air which causes it to fill the cylinder to its fullest extent at each stroke. . . .

"The two air cylinders in the Bloomington plant are capable of compressing 16.8 cubic feet of free air per revolution, which at 50 revolutions, the speed at which the compressor was ultimately running at the time of the test, is equal to 840 cubic feet of free air per minute. In pumping by air there is required a volume of about two to one for these wells, which gives 420 cubic feet of water per minute, and as there are 7.48 gallons of water in a cubic foot, the duty is about 3,140 gallons per minute, in round numbers 4,500,000 gallons in 24 hours. This result is obtained with about 50 revolutions per minute of the compressor, but the compressor is built to run 75 revolutions per minute, or, if necessary, it can be run at 100 revolutions.

"At this maximum speed the quantity of water delivered would be doubled, provided such a quantity of water would be yielded by the wells. The compressor is furnished with an automatic governor and stop, and also with an air regulator.

"The compressed air is conveyed from the receiver through the pipes to the bottom of the several wells. When released it begins to expand and carries the water up with it. When the water is first started from the wells it requires a higher pressure to lift it to the surface until the flow commences when there is a mixed column of air and water, the water rushing in from the adjacent strata as fast as it is lifted from the bottom of the well. This process is continued as long as there is water in the ground and the compressor is kept in operation. The air pressure required for the work during the test was about 50 pounds.

"It was stated by the superintendent of the water works and city engineer that with the Corliss compressor water can be pumped for one half of what it had formerly cost the city."

The Paris Exhibition of 1900.

OUR London contemporary, *Engineering*, publishes an article on the Paris exhibition of 1900, in which it declares that it may be "confidently anticipated that this exhibition will be the completest and most finished spectacle of its kind the world has seen," and that it appears "not improbable that it will be the last of a brilliant series at least for many years to come." Our contemporary states that the exhibition has progressed thus far in the face of considerable opposition, but that this opposition has largely disappeared, and will probably entirely do so as the preparations progress. It is expected that the friendly relations now existing between France and Russia will secure from the last named country a greater display than she has ever attempted before, while from Germany it is to be expected that an exhibit will come that will surpass the one shown at Chicago by that nation. Our contemporary says it is almost certain that the United States will make an unparalleled display: "As that country has started to take a hand in foreign politics, it realizes that it has begun, and that every year increases its power to enter into the markets of the world as a successful competitor in many branches of industry, and that even Germany may before long find it difficult to hold her own against the republic." It is stated that 200,000,000 francs, or \$40,000,000, will be spent before the gates are opened to the public. The full participation of England in the coming exhibition is urged, and it is declared that, with her almost limitless resources, "she could with ease throw any other foreign section into the background."

—A cotton tie made of wire has been recently tested at Columbia, S. C., and it is said to give very good results. A bale of cotton was put up by D. Crawford & Sons, of that city, and after a careful examination it was stated that the tie was as strong and kept the bale in as good shape as the flat tie, while it is very much cheaper. Another point claimed for the wire tie is that it can be placed upon the bale in a shorter period of time than by the old system. Six ties of No. 10 wire are attached to the bale and the weight of this quantity is but four pounds, while the cost is 12c. per bale, or 18c. less than the flat ties.

Going After Foreign Markets.

THE present year promises to be a remarkable one for the export trade of this country. Low prices and dull demand at home have compelled producers to seek foreign markets with more vigor and method than they have, perhaps, ever before shown. Manufacturers especially have awakened to the importance of the foreign trade as a feeder for their attenuated order books, and are canvassing every part of the world where there is the promise of business to be had. An excursion party of American manufacturers and merchants is now moving around somewhere near the southern end of South America, while in Europe there is an astonishingly large number of Americans this Summer who are establishing agencies and making other efforts to introduce or extend the sale of their goods. Many vacations that are being spent abroad by the heads of prominent houses were prompted by business considerations rather than a desire for rest and recuperation. A formidable list of Cincinnati and Eastern machine tool and wood working machinery builders who are now in Europe trying to open a larger market for their product could be given, if it were necessary to go into details.

That these efforts on the part of our people are not fruitless, the statistics for exports abundantly prove. July was a banner month in the export trade of American manufactures, according to the tables of the Treasury Department which we recently printed. Confirmatory evidence that the greater prosperity abroad is affording an increasing measure of relief to our dull and heavy-burdened markets is presented in the Treasury Department's figures for the movement of general merchandise between this and other countries. The figures follow:

	1896.	1895.
Exports, seven months.....	\$512,326,732	\$443,406,784
Imports, " ".....	421,583,123	464,625,876

Here we have an excess of exports over imports for the seven months of this year ended with July of \$90,734,609, as compared with an unfavorable trade balance for the corresponding period of 1895 amounting to \$21,219,092, which, however, was recovered in the next five months and a balance of over \$23,000,000 for the 12 months together secured in our favor. Hence it may be safely remarked that, with the splendid start already made—and at a time, too, when we are usually importing more merchandise than we are selling abroad—the prospects are uncommonly favorable for a great record for exports for the calendar year.

New Electric Carriage.

ON Tuesday, August 25th, several representatives of the trade and technical press had a very enjoyable ride in the new electric brake which has just been constructed by the American Electric Vehicle Company, of Chicago, for the well known firm of Montgomery Ward & Co. This concern has an immense business all through the country, which is entirely transacted through the mails, as they don't employ any travelling salesmen. It is their intention that the brake shall be sent all over the States. Stops will be made in the principal towns, and the carriage driven through the streets. A Pullman car has been purchased by the company, which they have elegantly fitted with sleeping and living accommodations for the use of those who will have charge of the brake. In the middle of the car a place has been constructed which will be occupied by the brake during the journeys between the different points.

The brake, which is an elegant specimen of the carriage builders' art, is equipped with two 2-horse-power single reduction motors which can be worked up to about double their nominal capacity when necessary. Instead of the sprocket and chain gear which has been so generally used on horseless carriages, the two motors are geared direct to the rear wheels of the vehicle by two small rawhide pinions on the motor shafts, meshing into large brass pinions attached to the axle inside the wheels.

Attached to each of the motors are also two geared wheels for the purpose of changing the speed of the motor shaft when necessary, this unique piece of mechanism being regulated from the driver's seat. The carriage is also equipped with controller, brake and steering apparatus, and for night runs two incandescent lamps are used which are inclosed in handsome lamp holders of the regular type used in carriages. The carriage is very light in appearance, contains two seats capable of holding six persons, and will be able to run up to a speed of 14 miles an hour. The motors and controllers are of a special pattern, made by the American Electric Vehicle Company, the storage batteries being of the well-known make of the Syracuse Electric Battery Company, Syracuse, N. Y.

THE great difficulty with American manufacturers and dealers in every line of manufacture has been that they waste their time shouting for a home market when there is no home market and can never be so long as the supply exceeds the demand. The markets they want are elsewhere in the world, and are not so hard to find if they would only take the trouble to hunt them up. The example of how to do this is now being set by the cycle manufacturers who have made a play for and already captured a fair share of the foreign trade.

—The Beacon Lamp Company, now located at Irvington street, Boston, Mass., are sending out the following notice: "On and after October 1, 1896, we shall be located in our new factory, at New Brunswick, N. J. With increased facilities in every way, including a larger factory, better equipped, superior shipping facilities, etc., we shall be in a better position than ever to serve you promptly, and ask for a continuance of your favors, which shall have as ever our best attention."



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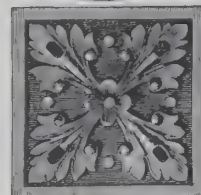
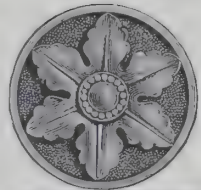
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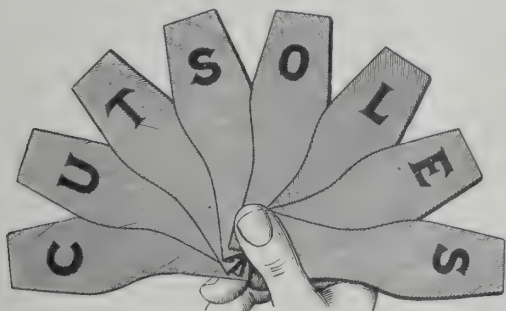
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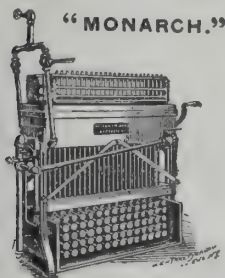
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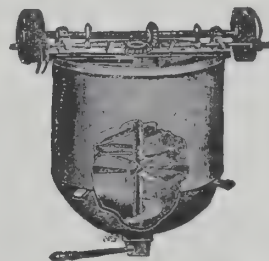
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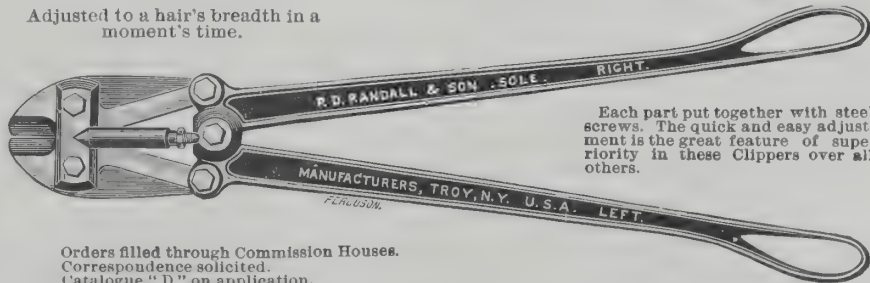
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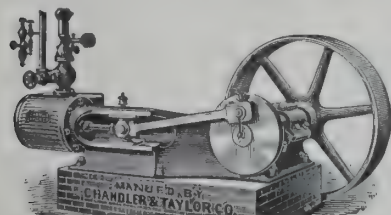
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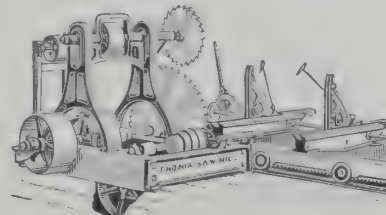
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Papermaking in This Country.

THOUGH the number of paper factories in the United States has decreased 20 per cent. during the last 15 years the product of American factories during the same period has increased 40 per cent., and the present capacity of the paper mills of the United States is 300,000 tons a year. More than \$100,000,000 is invested in the paper factories of the country, which number 700, and the total number of employees in them is larger than our standing army.

For many years, during the time that rag paper or straw paper was the standard, Great Britain stood at the head of the world's producers, and manufactured not only sufficient for the home demand, which is very extensive, but also had a surplus left over for export to other countries, whereas the American product of paper was insufficient even for home requirements. With, however, the discovery of the utility of wood pulp for papermaking and the process whereby the cost of paper has been reduced from 12½ to 2¼c. a pound the United States have been steadily pushing ahead and are now not only in advance of Great Britain but are increasing their lead rapidly. Germany follows Great Britain closely and may soon overtake it in papermaking.

The raw material, including wood pulp, rags, bagging, wood fibre and cotton waste, which enter into the composition of paper, represent a total annual investment in all the countries which have authentic figures of paper manufacture of \$100,000,000, and the chemicals used for dyeing or coloring papers, particularly high-grade note paper, involve a further expenditure of \$50,000,000. The ingredients which enter into the composition of paper of various kinds, in addition to those already given, are jute and straw, and the rags used are divided according to their serviceableness, into linen rags, which yield 50 per cent. of paper from the amount of material used; woollen rags, which yield 60 per cent., and cotton rags, which, by improved process, yield 65 per cent.

New York and Massachusetts stand at the head of the States in respect to the amount of paper manufactured. With the cheapening of the cost of paper not only have new uses been found for it (they have railway tracks made of paper in Germany, and paper pencils are no longer a novelty in New York) but the demand for paper has increased enormously. This is particularly noticeable in newspapers, the size of which has, in many cases, been increased to correspond to the reduction in price. Moreover, cheaper paper has boomed enormously the business of the publication of books and magazines. This reduction of cost in bookmaking by which a volume that, a few years ago, cost \$1, is now sold for 15 or 20c., has had one odd result, as is shown in the general decline of private libraries, for, with the cheapening of books, the incentive for collecting them seems to have departed, except in the case of rare books or those valued on account of the beauty of the binding or illustrations.

Wealth of the World.

A GREAT deal is said these days concerning the ability of the United States to adopt a financial policy of its own without seeking the co-operation of the other great commercial nations of the world, and without regard to what those countries may or may not do. In relation to this question the following table of estimates of the wealth of the leading civilized countries of the world, prepared by Professor Mulhall, the eminent English statistician, will be of interest:

United States.....	\$64,120,000,000
Great Britain.....	47,000,000,000
France.....	42,990,000,000
Germany.....	31,185,000,000
Russia.....	25,445,000,000
Austria.....	19,275,000,000
Italy.....	14,815,000,000
Spain.....	12,580,000,000
Australia.....	6,865,000,000
Belgium.....	5,035,000,000
Holland.....	4,900,000,000
Canada.....	4,180,000,000
Sweden.....	3,641,000,000
Roumania.....	3,180,000,000
Argentina.....	2,545,000,000

From this table it is seen that the United States is far ahead in the matter of aggregate wealth, having about 40 per cent. more than Great Britain, about 50 per cent. more than France and about 100 per cent. more than Germany. Great Britain, France, Australia and Holland are slightly in the lead of us in per capita wealth, Australia being the richest of all countries in the matter of wealth of population. Holland, however, boasts of the largest and best division of its wealth.

In the power of creating new wealth, in capacity of production, no country approaches the United States. Professor Mulhall expressed his surprise at the enormous amount and value, running into billions of dollars annually, of products of farm, factory and mine that we turn out year by year, an output that is continually growing decade by decade. If this rate of increase continues, as under normal conditions it is certain to do, the United States will in the not distant future equal in wealth all Europe. However, potentiality to create wealth in the future is not wealth in the present.—*Washington Post*.

—Among the latest novelties in the machine shop is a hydraulic tool for removing the heads of steel and iron rivets, and intended to supersede the present system of cutting them off by hammer and chisel. The new tool is of the portable type, 18 inches long, and is operated by means of hydraulic power. The hydraulic pump is controlled by a small hand lever, and drives a chisel-shaped cutter of chilled steel against the rivet head, shearing it off flush with the surface of the plate. The cutter can be readily removed for sharpening.

Gold or Silver and Foreign Trade.

FOREIGN countries, whether their money be based on gold, silver or paper, buy from us, much or little, according as we have what they want and they have the wherewithal to pay. It is entirely a matter of indifference to those countries, so far as concerns the purchase of our goods, what sort of money the United States has. Foreign countries are more or less interested, it is true, in the free-silver question of the United States. A few of them hold a good many of our securities. Others are anxious that we should be able to buy their goods. If we prosper we import foreign luxuries; if we are hard up our imports of such luxuries fall off. But the quantity of our grain and other products which they buy, and the price they pay for them, will be determined by matters wholly apart from our monetary system, for a monetary standard is necessarily restricted to domestic payments. Foreign trade is settled on the basis of market values, not legal tender laws.

The silver prices of all exports and imports must fluctuate with the price of gold, because they are fixed in foreign markets.

Miscellaneous Notes.

—The attention of papermakers in this country has been directed to the reed cane of the Mississippi Valley as a likely fibre to supplant spruce. Mr. T. E. Phillips claims to have discovered a process for the chemical treatment of the fibre, whereby a fine, strong white pulp can be produced at a cost of \$8 per ton.

—Vehicle trade papers say the foreign demand for American vehicles is increasing slowly but surely. One great trouble with the development of American export trade is, comparatively few Americans live abroad. Englishmen, for instance, live all over the world, and in placing orders naturally favor home manufacturers.

—The most curious use to which paper is to be put is that suggested by the recent patenting of a blotting-paper towel. It is a new style of bath towel, consisting of a full suit of heavy blotting paper. A person upon stepping out of his morning tub has only to array himself in one of these suits, and in a second he will be as dry as a bone.

—It is reported that the trade investigating committee of the National Association of American Manufacturers has arrived at their destination, Buenos Ayres, and that they have been most cordially received by representatives of the Government, the press and the people and that they are highly gratified with what they have already experienced.

—The Saginaw Manufacturing Company, Saginaw, Mich., are having a fine export trade in their wood split pulleys. They have made recent shipments to Mexico, Europe and also to Australia. Located in a fine timber region they are favorably situated for turning out superior goods at the smallest possible cost in the best manner of workmanship.

—San Francisco, Cal., during the past year did a very satisfactory trade with foreign countries. From Mexico she received coffee and silver bullion and sent in return cotton and quicksilver. From Central America coffee and limes and returned flour. From China rice and raw silks in return for flour. From Hawaiian Islands raw sugars and sent back refined sugar, cheese and butter. From Chile came nitrate of soda in return for labor-saving machinery and tools.

—The new ships for the Japanese Navy which may be contracted for in this country will not, it is said, be of the unarmored cruiser class, as has been understood, but of the armored cruiser and battleship type. The Japs have had some experience with war vessels in actual fighting lately and they appear to know what they want, not only, but where they can get first-class work. Japan is likely to become one of this country's best customers.

—A report received at the State Department from the United States Consul at Cologne, Germany, states that the American manufacturers are underselling the Germans in barbed wire and wire nails in Japan. Hamburg importing houses, it is said, are forced to buy the American wire because their customers have begun to purchase it directly from the United States. American competition, though felt elsewhere, has been especially noticeable in Japan.

—It is claimed that about as many scythes are now made and used in the world as at any former time. In North America the Australasian colonies, the United Kingdom, France and a large part of Germany, mowers, reapers and binders do nearly all the mowing and reaping; but the scythe for both mowing and reaping yet holds its own in other parts of Europe, including Russia and in the Oriental as well as Latin-American countries, the use of harvesting machinery is about keeping pace with the increase in area of cultivation.

THE latest Japanese Commissioner to visit New York is W. Araki, a quick-witted, bright-eyed young man who represents the interests of the Osaka Commercial Museum, a Government institution showing the progress made in the arts and sciences by civilized nations the world over. Mr. Araki passed two weeks in Chicago and he is going to remain in New York a month to purchase articles for his museum. Mr. Araki will purchase goods of all descriptions. They will be marked telling the price and the name of the manufacturer, the amount of export or import duty and other details as to their material and cost of production. Apparently Japan is anxious to learn so as to let the rest of the world know what she is doing. The commissioners that she sends to this country come here with a knowledge of English and in many cases with a very comprehensive knowledge of American government and industries. For nearly 20 years Japan has sent students to leading American colleges to fit them for just this kind of work, and many of them have made enviable records.



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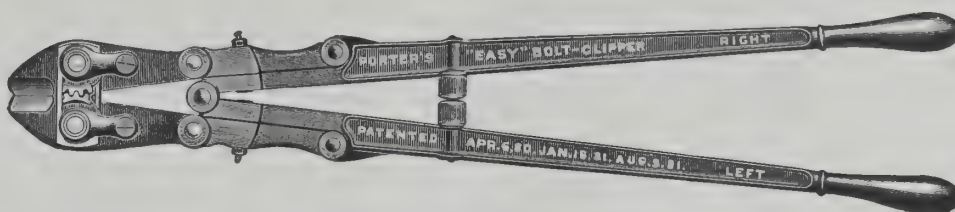
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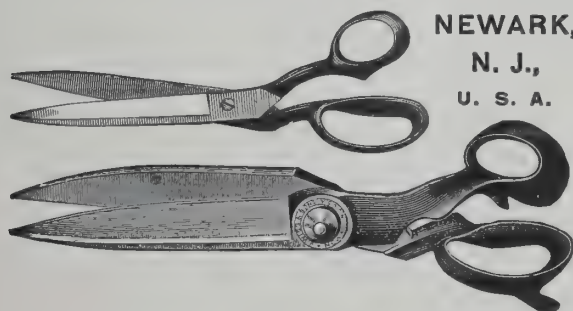
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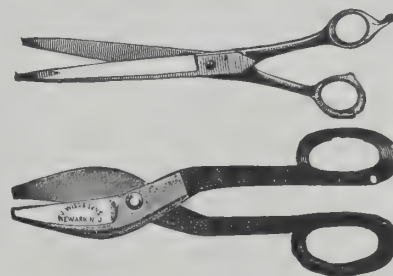
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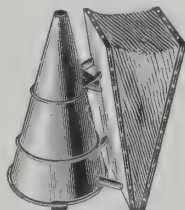


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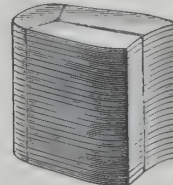
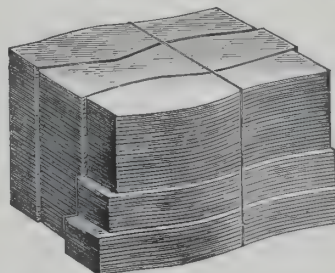
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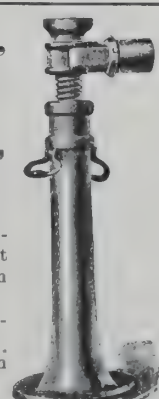
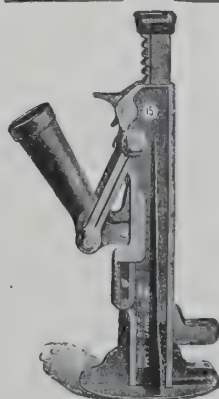
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at a time or instantly.

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Gum Metal Nuts and Steel Screws are used on
the Screw Jacks.

Send for catalogue and prices.



FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry) ..	Chile.....	2,575 bushels.	Oke.....	Turkey.....	2,85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1,599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1,54728 bushels.	Pic.....	Egypt.....	21 1/4 inches.
Arobe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.; full fanega 118 lbs.	Picuti.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1 C11 pounds.	do.....	Uruguay (double) ..	7.776 bushels.	do.....	China, Japan and Sumatra.	133 1/2 pounds.
Arroba (dry)...	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1,599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	do.....	Spain.....	16 gallons.	do.....	Philippine Islands	140 pounds.
do.....	Portugal.....	32.38 pounds.	Fanega (liquid)	Egypt.....	1.03 acres.	Pie.....	(hemp).	
do.....	Spain.....	25.36 pounds.	Feddan.....	Spain.....	50 pounds.	do.....	Philippine Islands	
do.....	Venezuela.....	25.4024 pounds.	Frail (raisins).	Argentine Republic	2,5096 quarts.	Pie.....	(sugar).	
Arroba (liquid).	Cuba, Spain and Venezuela.	4.263 gallons.	Frasco.....	Mexico.....	2.5 quarts.	do.....	Argentine Republic	0.9478 foot.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	do.....	Castilian.....	0.91407 foot.
Arshine (qu're)	do.....	5.44 square feet.	Garnice.....	Russian Poland ..	0.88 gallon.	Pik.....	Turkey.....	27.9 inches.
Artel.....	Morocco.....	1.12 pounds.	Gram.....	Metric.....	15.432 grains.	Pood.....	Russia.....	36.112 pounds.
Baril.....	Argentine Republic and Mexico.	20.0787 gallons.	Hectare.....	do.....	2.471 acres.	Pund (pound).	Denmark, Sweden...	1.102 pounds.
Barrel.....	Malta (customs)...	11.4 gallons.	Hectolitre:	do.....		Quarter.....	Great Britain.....	8.252 bushels.
do.....	Spain (raisins)...	100 pounds.	Dry.....	do.....	2,838 bushels.	do.....	London (coal).....	36 bushels.
Berkovet.....	Russia.....	361.12 pounds.	Liquid.....	do.....	26.417 gallons.	Quintal.....	Argentine Republic	101.42 pounds.
Bongkal.....	India.....	832 grains.	Joch.....	Austria-Hungary...	1.422 acres.	do.....	Brazil.....	130.06 pounds.
Bonw.....	Sumatra.....	7.0965 square metres.	Ken.....	Japan.....	4 yards.	do.....	Castile, Chile, Mex- ico and Peru.	101.61 pounds.
Bu.....	Japan.....	0.1 inch.	Kilogram (kilo)	Metric.....	2,2046 pounds.	do.....	Greece.....	123.2 pounds.
Butt (wine).....	Spain.....	140 gallons.	Kilometre.....	do.....	0.621376 mile.	do.....	Newfoundland (fish)	112 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Paraguay.....	100 pounds.
Candy.....	India (Bombay)...	529 pounds.	Kota.....	Japan.....	5.13 bushels.	do.....	Syria.....	125 pounds.
do.....	India (Madras)...	500 pounds.	Korree.....	Russia.....	3.5 bushels.	do.....	Metric.....	220.46 pounds.
Cantar.....	Morocco.....	113 pounds.	Last.....	Belgium, Holland...	85.134 bushels.	Rottle.....	Palestine.....	6 pounds.
do.....	Syria (Damascus)...	575 pounds.	do.....	England (dry malt)...	82.52 bushels.	do.....	Syria.....	5 1/2 pounds.
do.....	Turkey.....	124.7036 pounds.	do.....	Germany.....	2 metric tons (4,480 pounds.)	Sagen.....	Russia.....	7 feet.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Prussia.....	112.29 bushels.	Salm.....	Malta.....	490 pounds.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Russian Poland.....	113 1/2 bushels.	Se.....	Japan.....	3.6 feet.
Catty.....	China.....	1.333 1/3 (1 1/3) pounds.	do.....	Spain (salt).....	4.760 pounds.	Seer.....	India.....	1 pound 13 ounces.
do.....	Japan.....	1.31 pounds.	League (land)...	Paraguay.....	4.633 acres.	Shaku.....	Japan.....	10 inches.
do.....	Java, Siam, Malacca	1.35 pounds.	Li.....	China.....	2.115 feet.	Sho.....	do.....	1.6 quarts.
do.....	Sumatra.....	2.12 pounds.	Libra (pound)...	Castilian.....	7.100 grains (troy).	Standard (St.)	Lumber measure...	165 cubic feet.
Centaro.....	Central America...	4.2631 gallons.	do.....	Argentine Republic	1.0127 pounds.	Petersburg).	British.....	14 pounds.
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Central America...	1.043 pounds.	Stone.....	Uruguay.....	2.700 cuadras (see cu- dra).
do.....	Darmstadt.....	110.24 pounds.	do.....	Chile.....	1.014 pounds.	Suerte.....		
do.....	Denmark, Norway...	110.11 pounds.	do.....	Cuba.....	1.0161 pounds.	Tael.....	Cochin China.....	590.75 grains (troy).
do.....	Nuremberg.....	112.43 pounds.	do.....	Mexico.....	1.01465 pounds.	Tan.....	Japan.....	0.25 acre.
do.....	Prussia.....	113.44 pounds.	do.....	Peru.....	1.0143 pounds.	To.....	do.....	2 pecks.
do.....	Sweden.....	93.7 pounds.	do.....	Portugal.....	1.011 pounds.	Ton.....	Space measure	40 cubic feet.
do.....	Vienna.....	123.5 pounds.	do.....	Uruguay.....	1.0143 pounds.	Tonde (cereals)	Denmark.....	3.94785 bushels.
do.....	Zollverein.....	110.24 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tondeland.....	do.....	1.36 acres.
do.....	Double or metric	220.46 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tsubo.....	Japan.....	6 feet square.
Chih.....	China.....	14 inches.	Livre (pound)...	Greece.....	1.1 pounds.	Tsun.....	China.....	1.41 inches.
Coyan.....	Sarawak.....	3.098 pounds.	do.....	Guiana.....	1.0791 pounds.	Tunna.....	Sweden.....	4.5 bushels.
do.....	Siam (Koyan).....	2.867 pounds.	Load.....	England (timber)...	Squ're, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	Tunnland.....	do.....	1.22 acres.
Cuadra.....	Argentine Republic	4.2 acres.	Manzana.....	Costa Rica.....	1 1/2 acres.	Vara.....	Argentine Republic	34.1208 inches.
do.....	Paraguay.....	78.9 yards.	Marc.....	Bolivia.....	0.507 pound.	do.....	Castile.....	0.914117 yard.
do.....	Paraguay (square)...	8.077 square feet.	Maund.....	India.....	823 pounds.	do.....	Central America...	38.874 inches.
do.....	Uruguay.....	Nearly 2 acres.	Metre.....	Metric.....	39.37 inches.	do.....	Chile and Peru.....	33.367 inches.
Cubic metre.....	Metric.....	35.3 cubic feet.	Mil.....	Denmark.....	4.68 miles.	do.....	Cuba.....	33.384 inches.
Cwt. (hundred- weight).	British.....	112 pounds.	do.....	Denmark (geograph- ical).....	4.61 miles.	do.....	Curacao.....	33.375 inches.
Dessiatine.....	Russia.....	2.6997 acres.	Morgen.....	Prussia.....	0.63 acre.	do.....	Mexico.....	33 inches.
do.....	Spain.....	1.599 bushels.	Oke.....	Egypt.....	2.7225 pounds.	do.....	Paraguay.....	34 inches.
Drachme.....	Greece.....	Half ounce.	do.....	Greece.....	2.84 pounds.	Vedro.....	Venezuela.....	33.384 inches.
Dun.....	Japan.....	1 inch.	do.....	Hungary.....	3.0817 pounds.	Verges.....	Russia.....	2.707 gallons.
Egyptian wts. and measures.	(See CONSULAR RE- PORTS No. 144.)					Verst.....	Isle of Jersey.....	71.1 square rods.
Fanega (dry)...	Central America...	1,5745 bushels.				Vlocka.....	Russia.....	0.663 mile.
							Russian Poland.....	41.98 acres.

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes-ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ metre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.				EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.			
Length.	Surface.	Capacity.	Weight.	Notation.	1 kilometre	0.62137 mile.	1 mile
			Metric ton	1,000,000	1 metre	3,280.83 feet.	1 yard
			Quintal	100,000	1 centimetre	0.3937 inch.	1 foot
Myriametre			Myriagram	10,000	1 hectare	2.471 acres.	1 inch
Kilometre			Kilogram	1,000	1 are	119.6 square yards.	1 square mile
Hectometre			Hectogram	100	1 metric ton	2,204.62 pounds.	1 acre
Decametre			Decagram	10	1 kilogram	2.20463 pounds.	1 square foot
METRE.....	ARE.....	LITRE.....	GRAM.....		1 gram	15.43236 grains.	1 pound
Decimetre		Decilitre	Decigram	0.1	1 hectolitre	2.8377 bushels.	1 grain
Centimetre	Centiare	Centilitre	Centigram	0.01	1 hectolitre	26.417 gallons.	1 bushel
Millimetre		Millilitre	Milligram	0.001	1 litre	1.0567 quarts.	1 gallon
					1 stere.....	1.308 cubic yards.	1 cubic foot

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

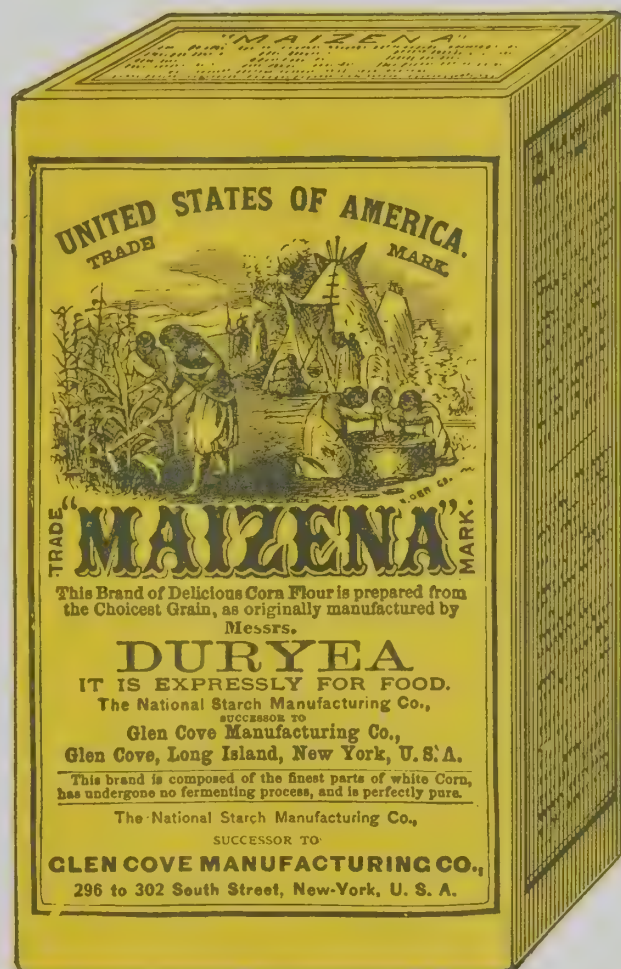
Millimetres $\times 0.03937$ = inches. Millimetres $\div 25.4$ = inches. Centimetres $\times 0.3937$ = inches. Centimetres $\div 2.54$ = inches. Metres $\times 39.37$ = inches. (Act Congress.) Metres $\div 3.281$ = feet. Metres $\div 1.094$ = yards. Kilometres $\times 0.621$ = miles. Kilometres $\div 1.609$ = miles. Kilometres $\times 3,280.7$ = feet. Square millimetres $\times 0.0155$ = sq. inches. Square millimetres $\div 645.1$ = sq. inches. Square centimetres $\times 0.155$ = sq. inches.	Square centimetres $\div 6.451$ = sq. inches. Square metres $\times 10.764$ = sq. feet. Square kilometres $\times 247.1$ = acres. Hectare $\times 2.471$ = acres. Cubic centimetres $\div 16.383$ = cubic inches. Cubic centimetres $\div 3.69$ = fl. drams. Cubic centimetres $\div 29.57$ = fluid oz. (U. S. P.) Cubic metres $\times 35.315$ = cubic feet. Cubic metres $\times 1.308$ = cubic yards. Cubic metres $\times 264.2$ = gallons (231 cu. in.) Litres $\times 61.022$ = cubic in. (Act Congress.) Litres $\times 33.84$ = fluid ounces (U. S. Phar.) Litres $\times 0.2642$ = gallons (231 cu. in.) Litres $\div 3.78$ = gallons (231 cu. in.)	Litres $\div 28.316$ = cubic feet. Hectolitres $\times 3.531$ = cubic feet. Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.) Hectolitres $\times 0.131$ = cubic yards. Hectolitres $\div 26.42$ = gallons (231 cu. in.) Grams $\times 15.432$ = grains. (Act Congress.) Grams $\div 981$ = dynes. Grams (water) $\div 29.57$ = fluid ounces. Grams $\div 28.35$ = ounces avoirdupois. Grams per cu. cent. $\div 27.7$ = lbs. per cu. in. Joule $\times 0.7373$ = foot pounds. Kilograms $\times 2.2046$ = pounds. Kilograms $\times 35.3$ = ounces avoirdupois. Kilograms $\div 1,102.3$ = tons (2,000 lbs.)	Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in. Kilogram-metres $\times 7.233$ = foot lbs. Kilo per metre $\times 0.672$ = lbs. per foot. Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot. Kilo per cheval $\times 2.235$ = lbs. per H. P. Kilowatts $\times 1.34$ = horse-power. Watts $\div 746$ = horse-power. Watts $\div 0.7373$ = foot pounds per second. Calorie $\times 3.968$ = B. T. U. Cheval vapeur $\times 0.9863$ = horse-power. (Centigrade $\times 1.8$) $\div 32$ = degree Fahrenheit. Franc $\times 0.193$ = dollars. Gravity Paris = 980.94 centimetres per sec.
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(DURYEA)



1 POUND.



1/2 POUND.

A BRAND OF CORN FLOUR.

NUTRITIOUS.

DELICIOUS.

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(SEE OTHER SIDE.)

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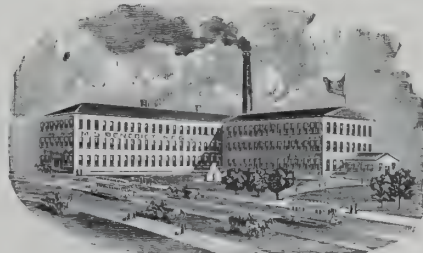
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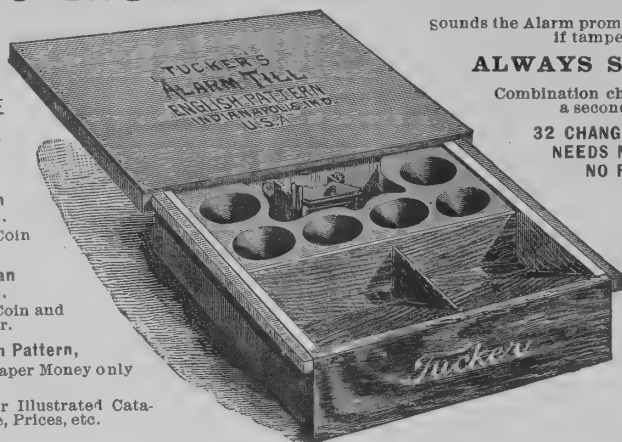
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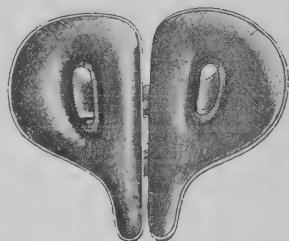
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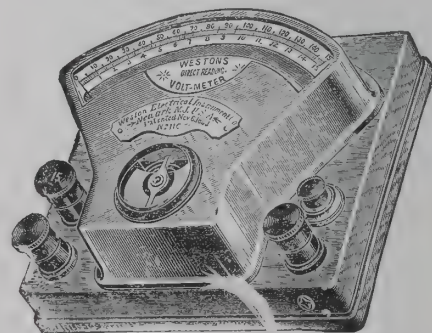
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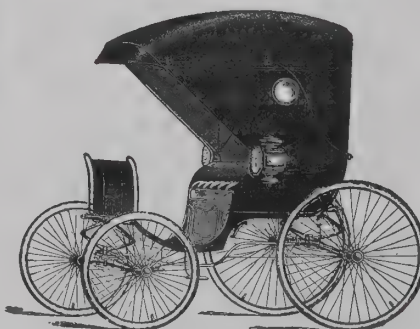
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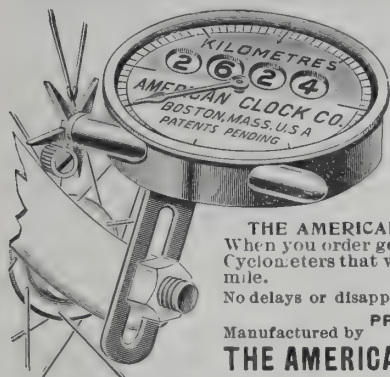
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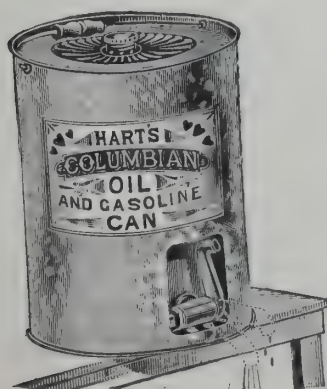
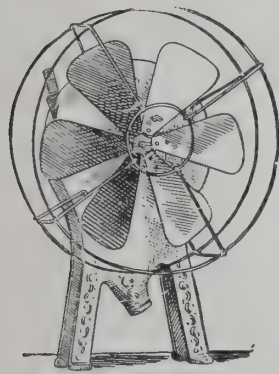
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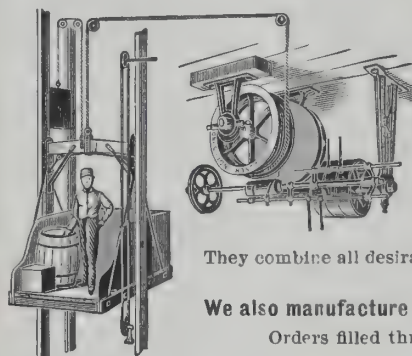
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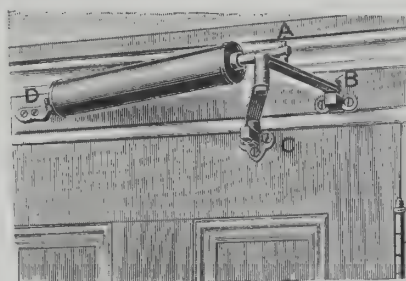
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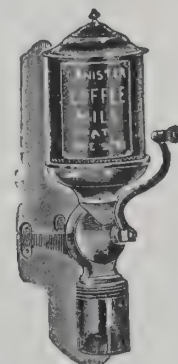
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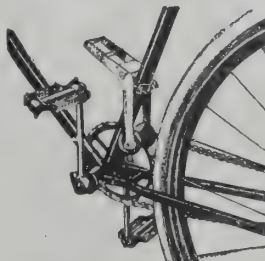
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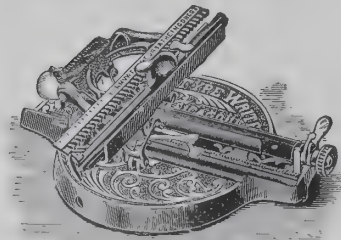
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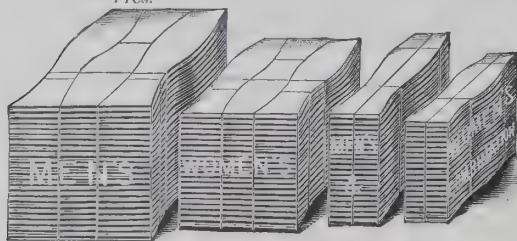
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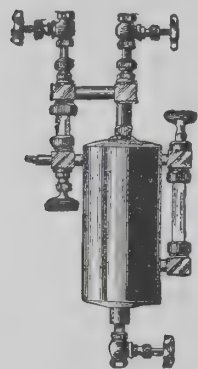
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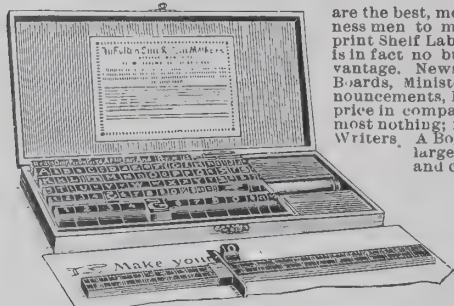
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SIMPLE. Can be used for DURABLE.

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Or Any Other Kind of Work.

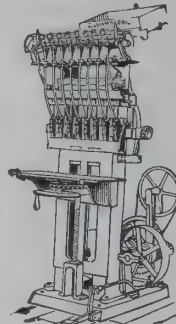
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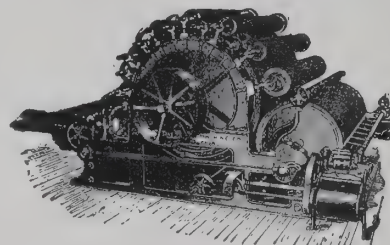
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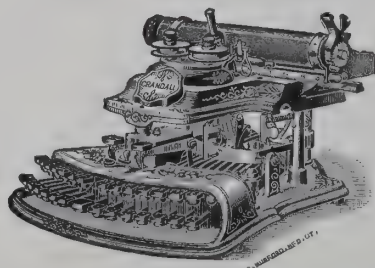
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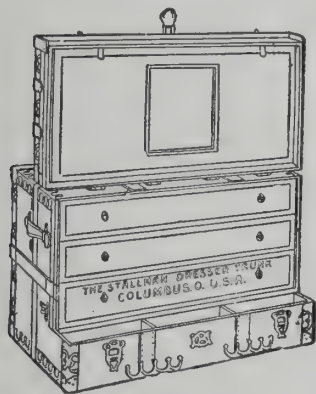
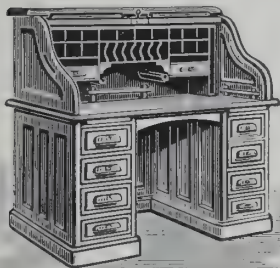
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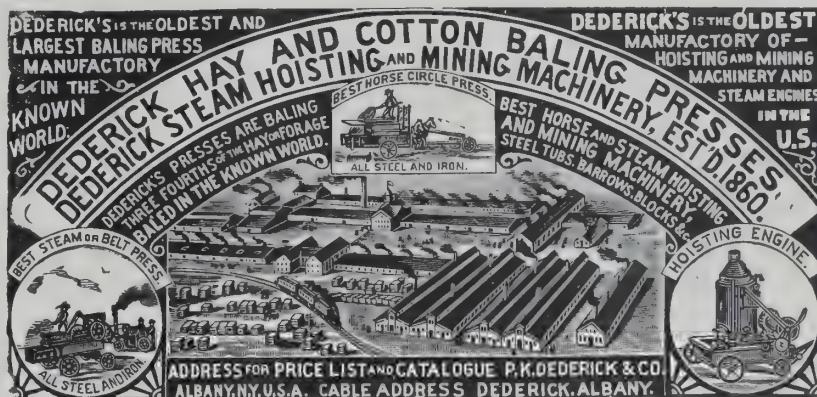
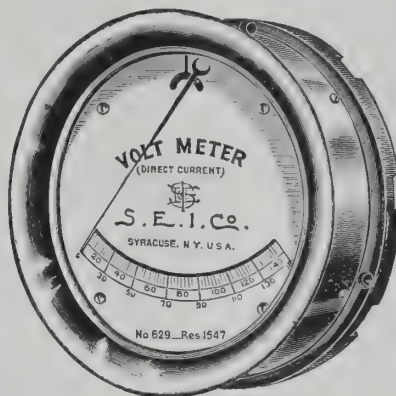
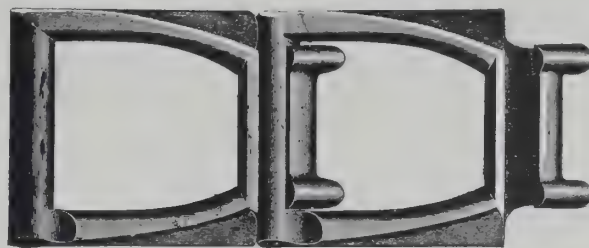
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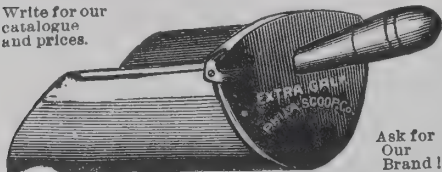


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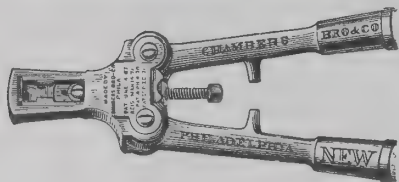


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With Wooden Heads and Handles,
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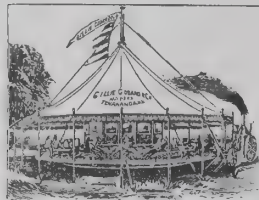


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Complete line adapted to every class of Metal and Plated Work.

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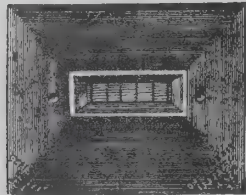
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THE MOST RAPID NAILING MACHINES IN USE.

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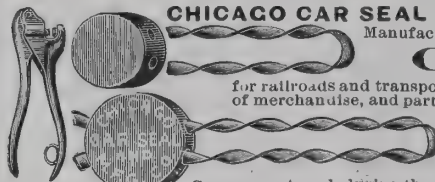


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Miles	Date
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1890-3533	" " " " "
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1892-4455	" " " " "
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This set replaced a set of Sarven Wheels that were in use one year. **TOTAL, 28,852 Miles.**
Price of 1st Set used up in 1 year. { Which is the cheaper
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Send for catalogue. **S. N. BROWN & CO.,**
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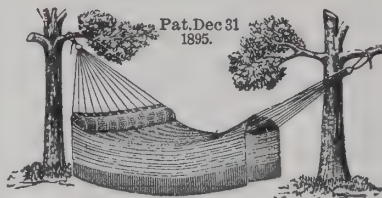


EMERY WHEELS, Made by our New Process. The Latest and Best Method.

Solid Emery and Corundum Wheels (with or without Wire Web),

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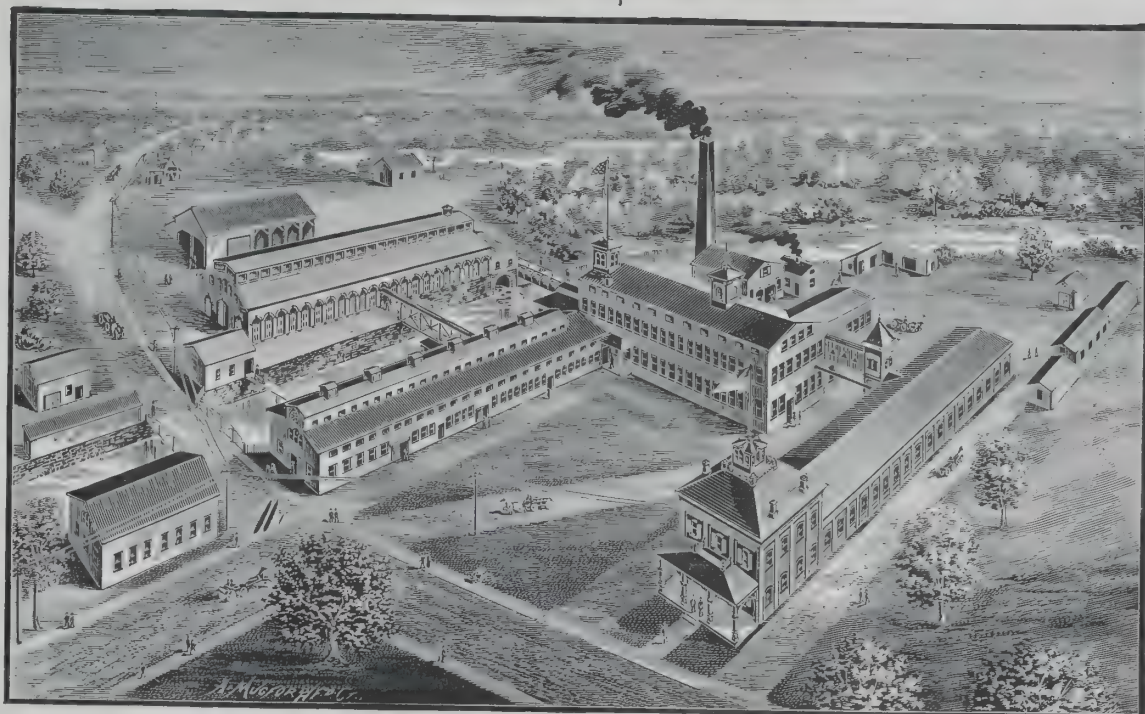
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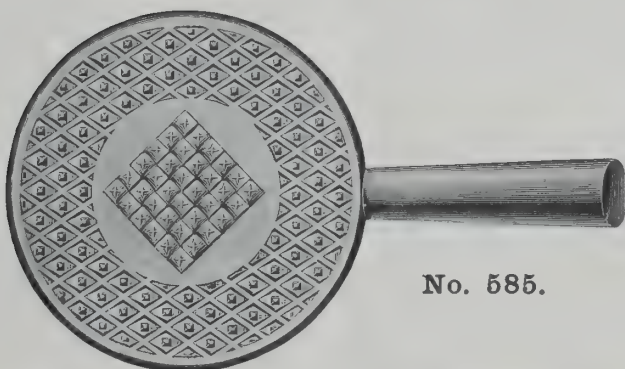
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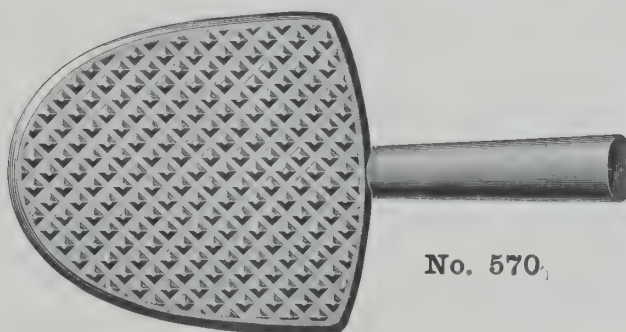
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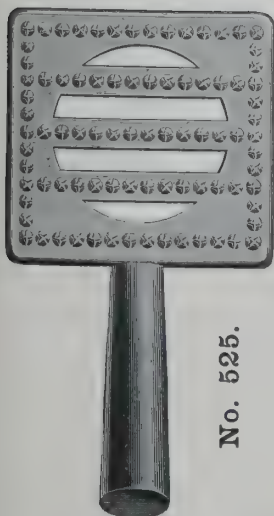
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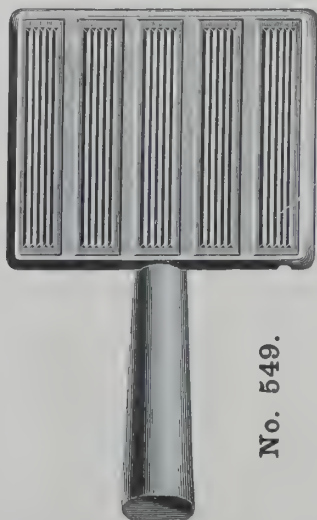
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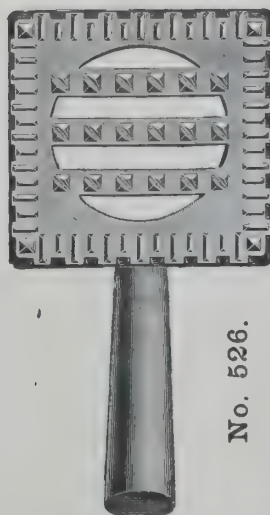
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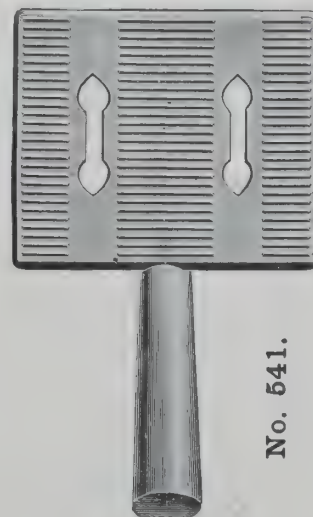
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AND IS WATERPROOF.

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RUSSET—

prepared expressly for Russia Calf, Goat, Kid, Seal,
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Kangaroo, Dongola, Kid, Goat, Seal, Box Calf, Har-
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Stains, used to convert light colored shoes into the pop-
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We do not guarantee satisfactory results unless used.
This Russet Polish is very popular. Saves time. Cleaner
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Has stood the test in every civilized
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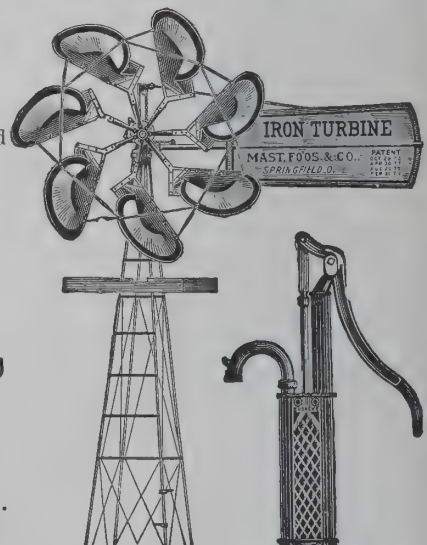
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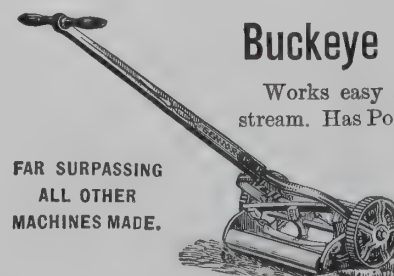


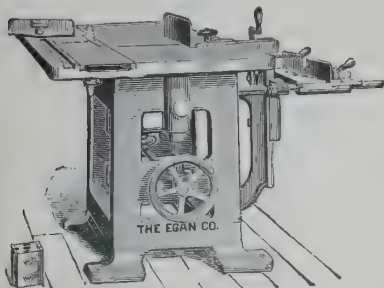
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Wells. Over 300,000

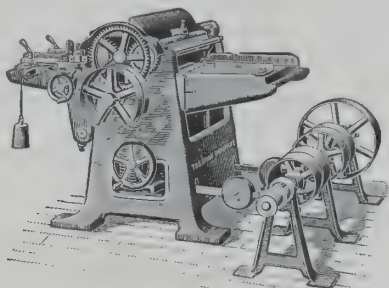
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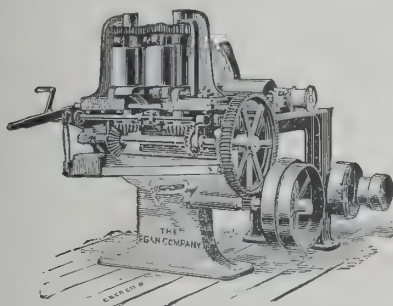
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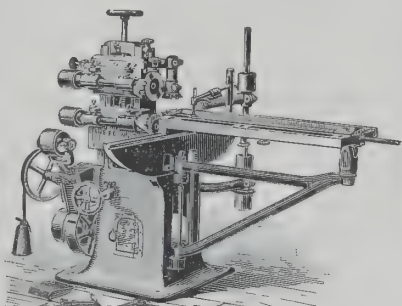
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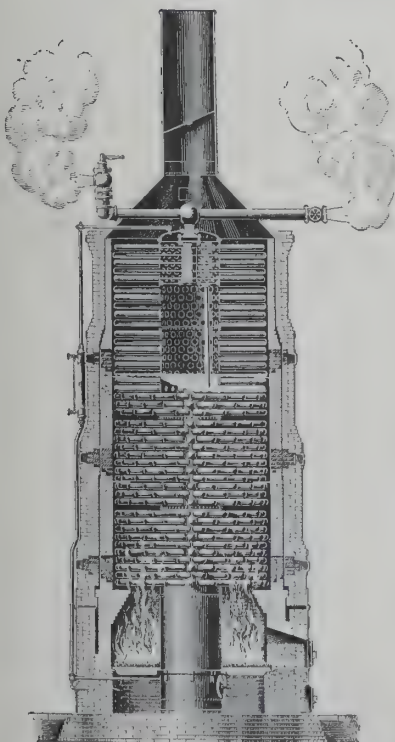


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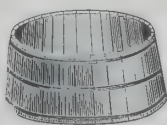
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Galvanized Steel Towers, all heights,
Iron Pumps, all kinds, furnished either Painted or Galvanized,
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Wrought Iron Pipe
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Work of all kinds.



Largest Factory
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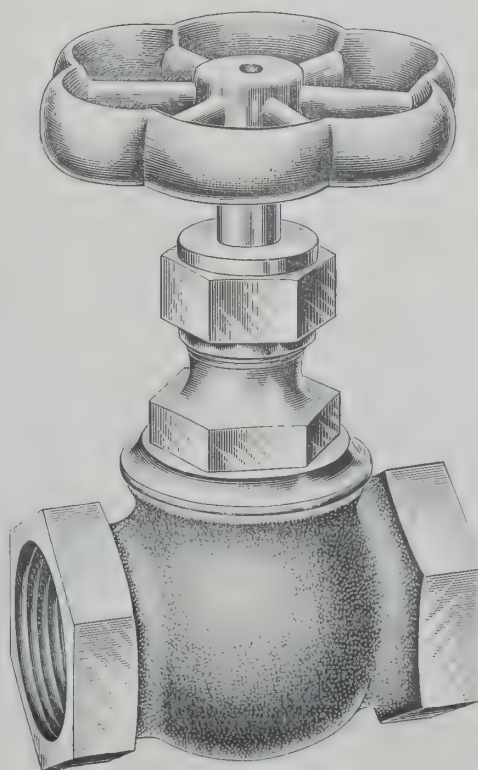
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FINEST QUALITY

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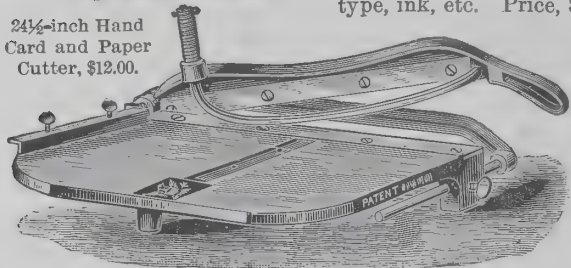
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GLOBE VALVE, Fig. 1501, made American or English Pipe Gauges.

Special Attention given Export Orders.



2 1/2-inch Hand
Card and Paper
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CHEAP PRINTING!

EVERY MAN MAY PRINT HIS OWN CARDS, CIRCULARS, ETC.

SMALL HAND PRESSES, simply arranged with type for any language, by which any person can do good printing. Typesetting perfectly easy, to even a boy, with our printed instructions sent with every press.

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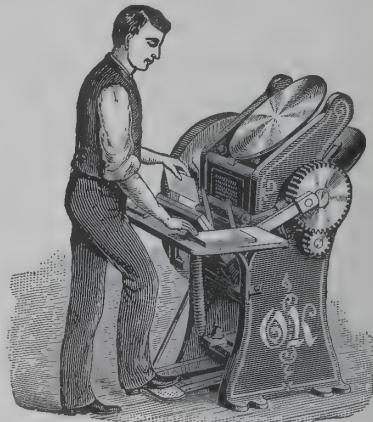
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Please write for our Illustrated Catalogue, by mail, of Presses, Type, Paper, Cards, etc., direct to our factory, near New York.

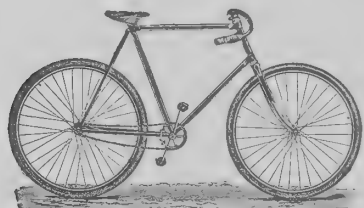
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A larger machine for fast work. Speed nearly 2,000 per hour. Chase, 9x13 inches. Weight, boxed, about 700 lbs. Price, only \$100.00. Price, \$200.00, if complete with type, ink, and all fixtures for general printing.



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ORDERS ACCEPTED THROUGH RELIABLE COMMISSION HOUSES.

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Export Discount, 55 per cent.

F. O. B. New York.

FRAMES—22, 24, 26 inches high; seamless steel tubing, large diameter; reinforced joints, 43-inch wheel base.

WHEELS—28 inches, wood or steel rims; piano-wire swaged tangent spokes nicked, barrel hubs turned from bar steel; M. & W. tires.

BEARINGS—Dust-proof; large balls; special steel cones, oil tempered; steel-ball races, tempered and polished.

HANDLE BARS—Drop, high, Ramshorn, steel or wood; cork grips.

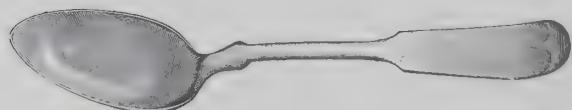
GEAR—64, 68, 72, 76, 80; forged sprockets, hardened; Cranks, 6 1/2 inch, forged; Chain, 1/4 inch, hardened.

FINISH—Black or colored enamel, highly polished; nickeling done on copper.

EQUIPMENT—Saddle, pedals, tool bag, tools and tire-repair outfit.

An extra set of Bearing Cones furnished with each Wheel for Export.

HIGHEST GRADE OF SPOONS AND FORKS.



TIPPED TEA SPOON, HALF SIZE.



The above cut represent our
INLAID SILVER BEFORE PLATING.



RIALTO TEA SPOON, HALF SIZE.

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GREEN BROS.

6 MAIDEN LANE, NEW YORK, U. S. A.

MANUFACTURERS AND EXPORTERS,

Tools, Materials and General Supplies

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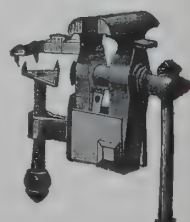
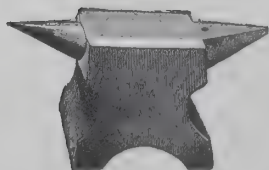
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We will with pleasure mail **FREE** of charge to those in the trade, upon application, our Handsome Extensive 1896 Illustrated Catalogue and Price List.

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Orders direct must be accompanied by Bank Draft. "In ordering through a Commission House care should be taken to mail to our address a duplicate of the order, with the name and address of Commission House to whom order is sent."



SHIP'S

MAIN

THE GOULDS MFG. CO.,

WORKS:

Seneca Falls, N. Y., U. S. A.

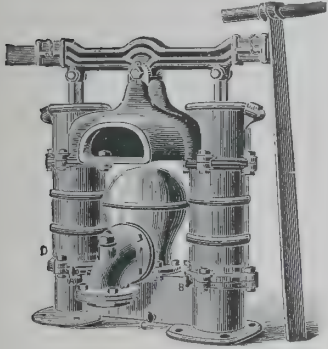
WAREHOUSES:

16 Murray St., New York.

Goulds Ship's Main and Bilge Pump

WITH WROUGHT-IRON EXTENSION LEVERS.

Fig. 579.



The cut represents our improved Ship's Main and Bilge Pump for use upon ship-board, in mines, and upon plantations for irrigation. It has a reversible top, heavy, strong bed plate, with brass valve seats cast in the base, poppet valves of new design; the suction pipe is attached to the vacuum chamber above the valves, so that they are always submerged; the plungers are always made of brass, with large waterways, and in the pumps with brass-lined cylinders we put brass valve seats. Always fitted for 3-inch wrought-iron suction pipe.

FIG. 579. SIZES, PRICES, ETC.

Dia. Cyls.	Stroke.	Iron Cyls.	Brass-lined Cyls.
5½ inches	6½ inches	\$60.00	\$80.00
5½ " "	8 " "	65.00	85.00
6 " "	8 " "	75.00	95.00
8 " "	8 " "	135.00	160.00

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ESTIMATES.

Correspondence solicited.

LIBERAL DISCOUNTS TO THE TRADE.

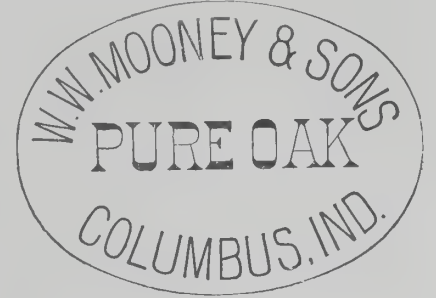
BILGE

PUMPS.

Dealers are looking

FOR GOOD PLACES AT WHICH TO BUY; FOR GOOD SUBSTANTIAL BRANDS OF LEATHER.

TRADEMARK.



That they often change tannages due to arguments of salesmen does not mean lack of knowledge, but a desire for something better, giving credit to a salesman's opinion, on the theory that he is more traveled, and hence may or should be well posted, and that there fore what he claims may be true.

The claim, as also the leather, is tested. Woe to the salesman if he has stated as true what he knows to be not true!

The success of the **Mooney Pure Oak, Hand-Stuffed Leather** is largely due, we think, to the fact that nothing not borne out by the tannage itself is permitted, with our consent, to be related concerning it.

It is Pure Oak Tanned—that's true.

It is Hand-Stuffed in the old-fashioned way—that's a fact.

It is slowly and well tanned—the leather tells that fact itself.

It is not increased in weight by methods that we believe to be harmful to any and all stock—that the scales will show.

It cuts economically, and there is a profit in it to the dealer—that your bank account will show.

These are Good Points, we believe, and they are such as we want Harness Dealers to remember, because they mean profit and better business to him if he uses **Mooney Pure Oak, Hand-Stuffed Leather**.

W. W. MOONEY & SONS, Columbus, Ind.

"MONARCH"

The Apex of Bicycle Perfection.

The finest equipped bicycle factory in the world (we have it) naturally produces the best bicycle—as near perfect as anything mechanical can be. Our 1896 models are the crowning glory of our unparalleled success as bicycle makers.

FOUR MODELS.

\$80 and \$100



Agents Wanted.

Write for Terms.

We also make the best of lower-priced machines, especially adapted to the jobbing trade—

DEFIANCE, eight models for adults and children, \$75, \$60, \$50, \$40, fully guaranteed.

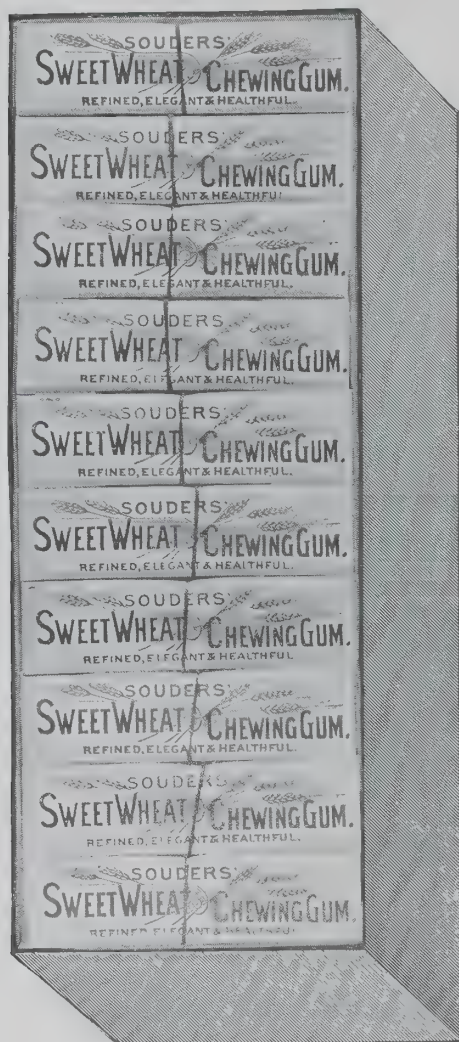
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Lake, Halsted and Fulton Streets,

CHICAGO, ILL., U. S. A.

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 IT SELLS QUICKLY AT A GOOD PROFIT.

 ORDER AT ONCE AND SECURE A VERY PROFITABLE AGENCY FOR YOUR CITY.

Dealers like to sell SWEET WHEAT CHEWING GUM because it is profitable and pleases their patrons.

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SOUDERS'
Sweet Wheat Chewing Gum

IS PACKED IN CASES FOR EXPORT AS FOLLOWS:

SIZE OF CASES.

				Long,	Wide,	Deep,	Weight.
				9 inches...	8 inches...	4 inches...	8 lbs.
5	Boxes	in a case for	\$2.25...	9	8	7	.14
10	..	..	..	4.25...	..	..	..
15	..	..	..	6.00...	10	7	.20
20	..	..	..	8.00...	9½	7	.26
30	..	..	..	12.00...	10	9	.38
60	..	..	..	22.80...	19	9	.83

Order through any New York export or commission merchant, and send duplicate of order to us to insure prompt shipment.

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ROYAL REMEDY & EXTRACT
COMPANY.

Sole Manufacturers.

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TO ACT AS AGENTS FOR US. CORRESPONDENCE SOLICITED.

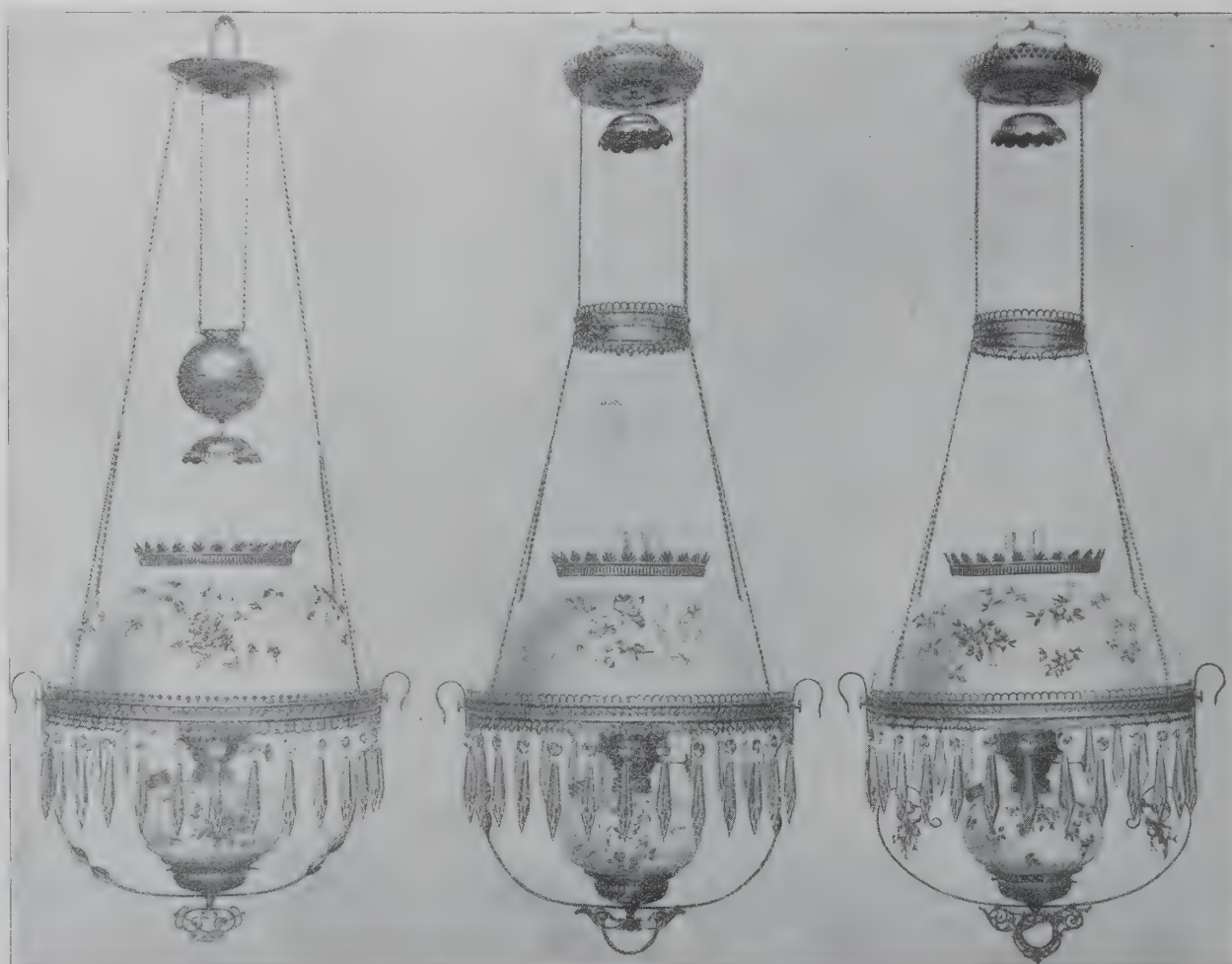


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AND
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Banquet Lamps.

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Order a sample pack-
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2 each of the No. 9604
@ \$2.50 each,
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THE AMERICAN EXPORTER.

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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers.....	1
Ace Cycle Co.—Bicycles.....	6
Akron Belting Co.—Leather Belting...	43
American Lamp & Brass Co.—Lamps...	8
American Clock Co.—Cyclometers.....	43
American Writing Machine Co.—Caligraph.....	15
Anderson & Co., Magnus—Exporters and Importers.....	—
Armitage-Herschell Co.—Steam Riding Gallery.....	44
Aultman & Taylor Machinery Co.—Threshing Machines, etc.....	29
Ayer, J. C. Co.—Patent Medicines.....	25
Ball & Co., Dayton—Shoe Lasts.....	40
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery.....	16
Barnett Co., G. & H.—Files.....	21
Baxter, Schenkelberger & Co.—Cut Soles.....	33
Bay State Cut Sole Co.....	44
Beacon Lamp Co.—X-Ray Tubes and Incandescent Lamps.....	31
Bellis Cycle Co.....	23
Benedict Mfg. Co., M. S.—Silver Plated Ware.....	44
Bennett & Co., H. L.—Stump Pullers...	40
Black Mfg. Co.—Bicycles.....	31
Blanchard Machine Co.—Disintegrators	31
Boligiano Co., John—Water Motor and Fan.....	43
Boyer, E. C.—Railroad and Wagon Lifting Jacks.....	40
Brigham & Co., F. L.—Shoes.....	43
Brown & Co., B. F.—Shoe Dressing.....	41
Brown & Co., S. N.—Wheels, Hubs, Spokes, etc.....	46
Buckeye Incubator Co.—Incubators and Brooders.....	45
Buffalo Cycle Co.—Bicycles.....	39
Buffalo Portable Steel House Co.....	46
Burgess, Edward A.—Box Nailing and Trimming Machines.....	16
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery.....	45
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc.....	35
Chamberlin Mfg. Co.—Stump Pullers...	43
Chambers Bros. Co.—Bolt Clippers.....	46
Chandler & Taylor Co.—Steam Engines and Boilers.....	45
Chicago Car Seal and Mfg. Co.....	46
Chicago Metal Stamping Co.....	—
Columbia Bolt Works—Bolt, Screws and Forgings.....	37
Columbus Phaeton Co.....	42
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc.....	47
Cornell & Co., F. H.—Boiler Oil Injector	44
Crandall Machine Co.—Typewriters....	41
Cretors & Co., C.—Peanut Roasters....	48
Crosby Steam Gage and Valve Co.—Safety and Water Valves.....	39
Cumberland Iron & Steel Shafting Co.	39
Deane Steam Pump Co.—Steam Pumps	37
Dederick, P. K. & Co.—Agricultural Implements.....	43
Densmore Typewriter Co.....	33
De la Balze Hermanos.....	—
De Lamater Iron Works—Hot-Air Pumping Engines.....	25
De Laval Separator Co.—Cream Separators.....	35
Diago, Frederico C.....	—
Dietz, R. E. Co.—Lamps.....	31
Diamond Hardware Co.—Stove Polishing Mittens.....	33
Divine Bros.—Buffing Wheels.....	46
Donegan & Swift—Engines, Injectors, etc.....	47
Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery.....	37
Doig, W. S.—Box Nailing Machines....	44
Dorman, T. J. F. W. Co.—Machinery for making Rubber Stamps, etc....	37
Douglas, W. & B.—Pumps, etc.....	15
Dry Kalsomine & Fresco Paint Works.	23
Eagle Cotton Gin Co.—Cotton Gins....	33
Eclipse Cement & Blacking Co.....	37
Eco Magnetic Clock Co.—Electric Clocks.....	43
Electric Emery Wheel Co.....	46
Engelberg Huller Co.—Rice and Coffee Machinery.....	1
Fay, J. A. & Egan Co.—Woodworking Machinery.....	5
Flagg Mfg. Co.—Shoe Machinery.....	35
Flint & Walling Mfg. Co.—Wind Mills, Pumps, etc.....	5
Fulton Iron Works—Sugar Cane Mills	26
Fulton Stamp Works.....	44
Furbush & Son Machine Co., M. A.....	41
Gara, McGinley & Co.—Sheet Metal Cornices, etc.....	25
General Electric Co.—Electrical Machinery.....	16
Gernert Bros. Lumber Co.—Pressed Wood Ornaments.....	39
Gillie, Goddard & Co.—Carousels....	46
Globe Buffer Co.—Shoe Machinery....	35
Goderich Organ Co.—Organs, Stools, etc.....	45
Goubert Mfg. Co.....	16
Gould Packing Co.—Steam and Water Packing.....	7
Goulds Mfg. Co.—Pumps of all kinds...	23
Gout Mfg. Co., David D. A.....	47
Green Bros.—Watchmakers' and Jewelers' Tools and Supplies.....	6
Hancock Inspirator Co.—Injectors, Ejectors and Gen'l Jet Apparatus.	21
Harrington & King Perforating Co.—Mining Screens.....	25
Hart Mfg. Co.—Faucet Can.....	41
Hartshorn Co., Stewart—Shade Rollers	2
Hastings & McIntosh Truss Co.....	33
Hauthaway, C. L. & Sons—Shoe Dressing.....	21
Hay & Willis Mfg. Co.—Bicycles.....	35
Haydenville Mfg. Co.—Steam, Water and Gas Supplies.....	5

PAGE	PAGE
Hazelton Boiler Co.....	5
Heller & Bros.—Files, Rasps, etc.....	35
Henderson & Co., C. H.—Cut Soles....	39
Holmes & Edwards Silver Co.—Spoons and Forks.....	6
Horrocks Desk Co.....	45
Houchin & Huber—Soap and Candle Machinery.....	39
Hough Cash Recorder Co.....	23
Huntley Mfg. Co.—Flour Mill Machinery.....	29
Hutchinson, F. S. Co.—Dumb Waiters and Elevators.....	43
James & Co., George—Soles, Taps, Heels, etc.....	40
Jeffrey Mfg. Co.—Detachable Chain Belting.....	45
Jenkins Bros.—Packings.....	31, 33
Kelsey & Co.—Printing Presses.....	6
Keystone Mfg. Co.—Agricultural Implements.....	26
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc.....	1
Layman Pneumatic Boat and Sporting Goods Co.....	42
Leffel, Jas. & Co.—Water Wheels and Steam Engines.....	16
Lidgerwood Mfg. Co.—Hoisting Engines	35
Marston & Co., J. M.—Foot and Hand Power Saws.....	35
Martin & Co., W. E.—Shoe Dressing....	40
Mast, Foss & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc.....	4
McCammon Piano Co.....	42
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc.....	29
Monarch Cycle Co.—Bicycles.....	7
Mooney & Sons, W. W.—Tanners and Curriers.....	7
Norris European and American Express Co.....	—
Moss, Geo. A.—Shoe Dressing for Ladies and Children.....	42
Myers, S. F. & Co.—Jewelry of all kinds	6
National Meter Co.—Water Meters....	19
National Starch Mfg. Co.—Maizena....	29
New Jersey Paint Works—Copper Paint, etc.....	25
New Process Twist Drill Co.....	23
New York City Peanut Roaster Works	46
New York Motor Co.....	47
Nicholson File Co.—Files.....	21
Norman & Evans—Steam Merry-go-rounds.....	46
Odell Typewriter Co.—Typewriters....	—
Onken Co., Oscar—Triplicate Mirrors..	31
Osborne & Co., C. S.—Saddle and Harness Tools.....	46
Parke & Co., John Y.—Bicycle Brake...	43
Parkhurst Bros. & Co.—Elevators.....	44
Partrick & Carter Co.—Electrical Supplies.....	48
Pelton Water Wheel Co.....	2
Peru Electric Mfg. Co.—Porcelain Tubes and Carbon Batteries.....	42
Philadelphia Novelty Mfg. Co.—Hardware Novelties.....	46
Philadelphia Scoop Co.....	46
Plume & Atwood Mfg. Co.—Lamps.....	2
Polson Iron Works—Boilers, Engines, Steam Yachts, etc.....	41
Porter, H. K.—Bolt Clippers.....	40
Premier Pen Co.—Fountain Pens.....	33
Randall & Son, P. D.—Bolt Clippers....	39
Rhyder, W. J.—American Commercial Agency.....	—
Rockwell & Co., C. A.—Coffee Mills....	43
Root Co., A. I.—Beekeepers' Supplies..	41
Royal Remedy & Extract Co.—Sweet Wheat Chewing Gum.....	8
Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc.....	21
S. E. I. Co.—Voltmeters & Ammeters....	45
Samson Cordage Works—Cords of all kinds.....	37
Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc.....	47
Savage Repeating Arms Co.—Rifles....	48
Schamandian, D.....	—
Schoilhorn Co., Wm.—Shears and Scissors.....	23
Schrader's Son, A.—Diving Apparatus.	46
Shultz Belting Co.—Rawhide Belting and Lace Leather.....	44
Silver Lake Co.—Braided Cordage.....	39
Simonds Mfg. Co.—Saws.....	35
Smith & Co., H. D.—Carriage Hardware.	3
Stallman, F. A.—Dresser Trunks.....	45
Standard Hammock Mills.....	46
Standard Tool Co.—Twist Drills, etc....	23
Stanley Works, The—Brackets.....	21
Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines.	4
St. Joseph Pump Mfg. Co.—Water Elevator.....	25
Stietjes & Co., F.—Importers.....	46
Stubbs Mercantile Agency.....	—
Sturtevant Co., B. F.—Pressure Blowers	47
Sweinhart Co., V. H.—Combination Locks.....	42
Talbot & Co., W. E.—Brick Machinery	46
Tanite Co., The—Emery Wheels, Whetstones, etc.....	48
Tarr, James H.—Copper Paint.....	41
Thompson, A. R.—Tuyere Irons.....	46
Thompson Diphtheria Cure Co.....	40
Thomson Meter Co.—Water Meters....	48
Thresher Electric Co.—Electrical Machinery.....	15
Tribby Shoe Polish Mfg. Co.....	4
Tubular Rivet & Stud Co.....	47
Tucker & Dorsey Mfg. Co.—Alarm Money Drawer.....	42
Union Sand Paper & Emery Wheel Co.	37
U. S. Buggy & Cart Co.—Wagons and Carriages.....	44
U. S. Playing Card Co.....	41
Utica Steam Gauge Co.....	44
Waterous Engine Works Co.—Saw Mill Machinery.....	19
Weber Gas & Gasoline Engine Co.....	23
Weidlich, O. E.—Fountain and Stylographic Pens.....	39
Weston Electrical Instrument Co.—Electrometers.....	42
Whittemore Bros. & Co.—Shoe Dressing and Patent Leather Polish....	15
Willard & Frick Mfg. Co.—Time Recorders.....	45
Wiss & Sons, J.—Shears and Scissors...	40
Woerner Preserving Co.—Canned Goods, etc.....	43
Woolsey Paint and Color Co., C. A.—Paints, Colors, Kalsomines, etc....	41
Wyckoff, Seamans & Benedict—Remington Typewriter.....	2

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to originate trade, and not to execute orders, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

It does not take goods in exchange for advertising space.

It does not employ the purchasing power of commission merchants and shippers to influence patronage.

NOTICE TO ADVERTISERS.

We desire it distinctly understood by our customers and those who contemplate making use of our publications, THE AMERICAN EXPORTER and EL EXPORTADOR AMERICANO, that space in these journals for advertising purposes is sold only upon the merits of the publications—for that purpose. For this reason, no advertising solicitor or agency has any right, or authority, to agree to perform any special service whatever to obtain orders for advertising.

We make it a practice not to discuss the merits or demerits of other export trade papers. Comments on their value may be made with more propriety by those advertisers who have had experience in the use of such publications.

THE JOHN C. COCHRAN CO

NO MORE FAMINES ANYWHERE.

THE world is short of breadstuffs. It is within the memory of some now living when an announcement such as this would have caused consternation in the minds of the sympathetic and would have meant a catastrophe for the people of some country. This is the case no longer. People everywhere read about short crops in Russia, India, Argentina, Spain or Mexico with perfect equanimity. Knowing that the commercial comity and transportation facilities between nations will promptly shift the surplus of one country to make up the shortage of another, so that the people of no country need suffer for food.

Russia's wheat crop of 1896 is reported 96,000,000 bushels less than last year, and only 27,000,000 bushels more than in its last year of famine, 1891. Its rye crop is 136,000,000 bushels less and the barley crop 48,000,000 bushels less than last year. Spain's crop is reported 30 per cent. less than last year. India's crop is below the average. Argentina's surplus of last year is about exhausted, and its new crop is not due until January. Australia's supply has given out, and it is now buying abroad. A corn famine exists in two Mexican provinces upon which it depends for its supply of gain. This has induced the removal of the import duty on corn from the United States. It is interesting to note how this combination of causes affects the export of American grain.

According to *Bradstreet's* the exports of wheat from both coasts of the United States for the period July 1 to October 1, 1896, were 43,849,931 bushels, against 28,713,589 for the same period of last year, counting flour at its equivalent in wheat. Of corn the export was 2,395,000 bushels, against 14,670,829 for last year. In this is seen the quick commercial response made by America for the food supply of the world. While such a response is possible, famine anywhere is not possible.

A CHEATING GAME NEVER PROSPERS.

THIS old proverb is confirmed in many ways in the experience of all mankind. In *THE AMERICAN EXPORTER* for August, 1896, under the title of "What the American Republic Stands For," we said: "The American Republic stands for superior manhood—a manhood that cannot thrive by entering into competition with the world to undercut the lowest wages or to fasten the fetters of poverty on the ignorant by selling adulterated goods." These remarks were called forth by the advice given to American manufacturers by Mr. Adolf Stern, who has for years represented English houses in Honduras and other Central American States. Mr. Stern took occasion to say: "When a European print mill sends prints to the South it makes the goods up in short pieces and ties them neatly with red ribbons. It puts gaudy pictures on the package, and these two little things are the main factors in selling the stuff." He then confesses: "The buyers are mostly Indians. They are attracted by anything gaudy, and give it a preference over the heavier and better American goods cut from a long piece. These goods, as a rule, are full of sizing and will not stand a thorough wash. They do not begin to compare with American prints."

We pointed out in the article referred to that it was a mistake to suppose that Indians would never learn the difference between a piece of goods that "will not stand a thorough wash" and one that will do good service, and then added: "Merchants dealing with Indians who want a trade they can hold can afford to take a little trouble in educating them how to test goods for 'sizing' or for good fibres." The British Consul at Zanzibar, Africa, through the columns of the *London Times*, in a recent issue, sends a remarkable confirmation of the correctness of our conclusions. He writes: "Of all the imports to Zanzibar, that of piece goods is by far the most important. Last year it was twice as much as that of any other article, and while the imports of piece goods from other importing countries increased, those from Great Britain declined by a fourth. The so-called 'gray cloth,' a kind of unbleached cloth, which is in great demand in the interior of Africa, and in some parts forms the only currency, is the most important class of piece goods imported,

and America has the best part of this trade, not only because it was first in the field with it, but *because it is of better quality than Manchester productions of the same price, is free from sizing, and does not shrink when washed.* The American cloth also is stouter, and can be relied on for uniform weight, while consignments from other countries vary both in weight and width. In some parts the American cloth, though costing more than the British, practically monopolizes the market."

There is a double lesson in this report. First, for the American manufacturers. It says to them plainly, Send none but your best products abroad. See to it that the quality, design, adaptability and finish of everything bearing your name to other nations are such as will cause your signatures to be honored wherever seen throughout the world. Second, for importers in foreign countries. It says to them in the most convincing way, Secure the handling of well-made American goods. Take the trouble to teach the people of your country their points of superiority, and when you get the trade once started you will have a business that you can hold and that will grow from year to year. Don't permit your prejudices in favor of goods from other countries to lead you astray. If the untaught tribes of Africa decline English and buy American goods on account of reliability and quality, how much more surely will the educated people of other nations do so? Read this report of the British Consul at Zanzibar closely and be guided by its moral.

TEN YEARS' GROWTH OF AMERICAN MANUFACTURED EXPORTS.

THE growth of American manufactured exports is one of the most striking commercial features in the world's history for the decade 1886-1896.

Until 1894 the proportion of manufactured to the total exports of the United States had only once exceeded 20 per cent. In 1894 the proportion was 21.14 per cent., in 1895 it was 23.14 per cent., and in 1896 it was 26.47 per cent. of the whole. These figures are for the fiscal year ending June 30th. Returns for the first seven months of the calendar year 1896 show that the proportion is still missing, the figures being 28.37 per cent.

The total gain in exports for the first seven months of 1896 over the same period of 1885 was \$66,000,000, of which \$31,500,000 were manufactured products.

The total value of the exports of manufactures for seven months ending July 31, 1896, exceeds the annual average for the 10 years preceding 1892.

About one-third of the whole value of the year's exports of manufactures has usually been accounted for by mineral oils. But the total of this item in 1886 was \$50,000,000, while for 1896 it was \$56,000,000, so that the gain of \$92,000,000 in manufactured exports for 1896 over 1886 is only fractionally due to that source.

The principal gains are shown by the following comparative statement:

COMPARATIVE STATEMENT OF EXPORTS OF AMERICAN MANUFACTURES.

Items.	1886.	1896.
Iron and steel, manufactures of.....	\$15,745,000	\$41,150,000
Agricultural implements	2,367,000	5,176,000
Leather and its manufactures	8,737,000	20,242,000
Wood and manufactures of.....	20,643,000	31,947,000
Copper, chiefly in ingots and bars.....	2,602,000	18,646,000
Brass and its manufactures	150,807	872,396
Carriages and cars for street and steam railroads...	1,927,000	2,887,000
Glass and glassware.....	773,878	1,062,225
Gunpowder and explosives.....	611,330	1,381,259
Musical instruments.....	871,446	1,271,161
Paper and its manufactures.....	1,106,616	2,713,875
Paraffin and paraffin wax.....	1,729,313	4,406,841
Soap	832,777	1,278,645
Woolens.....	653,633	913,609

Cotton goods show no increase in value for the 10 years, but there has been an increase of about 30 per cent. in quantity.

One of the remarkable features in the export list is that of "cycles and parts thereof." The enumeration of this group commenced as recently as July 1, 1895, only one year ago. In the following 12 months the exports were \$1,898,012. The enormous growth of this trade is shown by the fact that for the seven months ending July 31, 1896, the exports of cycles reached the total of

\$2,098,365—a fact which indicated that the trade is almost exclusively the product of the present calendar year.

The exports of manufactures for July, 1895, were \$17,306,000, and for July, 1896, they were \$21,553,000. Such a gain sustained during the current fiscal year will bring the total of manufactured exports for the year ending June 30, 1897, up to about \$270,000,000, or nearly one-half of the usual annual average of the exports of agriculture.

It is evident from this exhibit that American manufacturers are fast becoming factors of high influence in the commerce of the world.

COMMERCIAL FRAUDS

THE time has come when it can be made clear to all honest manufacturers, importers and merchants that it is necessary for them, in the interest of commercial morality, to combine for the purpose of protecting themselves and their customers from commercial frauds of every kind. Honest dealing should not be a partisan nor a national issue, but the cause of the whole world unit, the cause of humanity. A world association for the promotion of this cause should be organized, with branches in every nation, one object of which should be to prevent the manufacture and sale of counterfeit commodities with as rigid restrictions and as drastic penalties as are provided to prevent the manufacture and circulation of counterfeit money. In economic principle there is no difference between commodities and money. The difference that does exist between them is solely that of degree of utility.

The value of a manufactured article depends on the skill and honesty of the hands that make it. The sale depends largely upon the reputation of this skill and honesty. If, therefore, imitators are permitted to manufacture counterfeits of the article and sell them on the reputation for skill and honesty acquired by the genuine a robbery is permitted, not alone of the profits of the honest manufacturer, but of the wages of his employees and of all of the endless train of persons who produce and transport to him the materials consumed in his manufactures on the one hand, and of all those engaged in the transporting from him to place of final use and in the sale of his finished products on the other hand. What is true of one manufacturer in this respect is true of all manufacturers, regardless of the place where located. The principles of honesty, the principles of sound economy, the requirements of commercial integrity originate in universal natural laws. When not in accord with them the legislation or custom of all states and nations becomes a local disease which poisons the blood of international commerce and destroys the vitality of world-wide prosperity.

Concrete illustrations of the necessity for a world-wide movement to prevent commercial fraud are furnished by Mr. Edward Bedloe, ex-United States Consul to Amoy, China, in a recent communication to the *Public Ledger* of Philadelphia, Pa., U. S. A. In the course of his article, Mr. Bedloe says:

"The great British houses, the German companies and the French firms leave no stone unturned to hinder or injure, to kill or hurt American trade and to promote their own. Some foreign firms go to lengths which, in the United States, would be regarded as actionable at law, and even punishable by the criminal courts.

EXAMPLES OF COMMERCIAL FRAUDS.

"This is no rash assertion, but rather an understatement. Much of my consular work while in China consisted in exposing and checking these infamous commercial frauds. One example was an imitation Winchester rifle, made in Belgium of the lowest-grade materials, which was as liable to kill the man who fired it as the man fired at. Another illustration was the dangerous imitations of our fine Union cartridges for Winchesters, Colts, Remingtons, Smith & Wessons and other first-class firearms, which were made somewhere near Birmingham, England, by 'cheap' labor and of poor materials, which were worse than worthless."

"Among other frauds I remember to have seen practiced were the filling of American flour bags with poor Japanese flour; Siberian salmon done up in crates in the same style as the best

salmon of California and Oregon. Another were canvas covers of Chicago ham and bacon filled with pork from heaven only knows where. Ames axes and shovels, Disston saws, Rochester lamps and American student lamps I have seen cheap imitations of many times. Worst of all, I have seen the trashiest barytes-filled English cotton cloth stamped with counterfeit labels of the Amoskeag, Fall River, Taunton, Willimantic and other high-class American trademarks.

"American kerosene tins are filled with the lowest-grade Russian oil, and even kerosene derived from the new petroleum discovered in Sumatra. American cigarettes are imitated, as are also American sewing machines and American clocks. This is the condition which exists to-day, and what we may expect to have continued until our great merchants unite and compel the enactment of treaties which shall put an end to this mean and contemptible style of swindling and robbery.

"Our American goods have a high reputation in all the Eastern markets; they are universally recognized as the best. To the Oriental the mere fact that an article is American is a guarantee of its worth and value. Next to us in the Chinese mind comes Germany, where the Government exercises some supervision over its commerce. Then France follows, and lowest of all are Great Britain and Belgium, where imitating and counterfeiting have attained the proportions of actual handicrafts, and made the foundations of enormous trade in the Orient."

For the correction of the evils set forth, and all similar frauds, there must be co-operative action between the honest manufacturers and merchants of all nations. The evils complained of are not the peculiar characteristics of any nation. Men of defective morality, governed by a low standard of honor, or no honor at all, are found in business in every nation. In *THE AMERICAN EXPORTER* for March, 1896, we had occasion to direct attention to "Commission Pirates," operating on similar methods in the United States and England. English manufacturers have attempted to shut out German imitations of their goods by an act requiring everything imported from Germany to be stamped "German Made."

In our opinion a world association, such as is here suggested, would quickly acquire enormous influence and prestige, and can speedily begin effective work in uprooting and killing commercial frauds.

RUSSIAN INDUSTRIAL PROGRESS.

ONE feature of the closing decade of the nineteenth century of high importance is the universal development of mechanical industry. The principal manufacturing nations are working at white heat, each to prevent the others from outstripping it in the race for commercial supremacy, while the indolent nations of the Orient, India, China and Japan, are awaking to a new life and are feeling the impulse of machine labor.

Between these two extremes the vast empire of "All the Russias" looms into prominence with its slow, but resistless, on movement, which for many years, glacier-like, was not seen to move, but was always moving. Now the movement has become visible, and its momentum will be increased from year to year as the great problem of internal transportation is solved.

Russia may possess three sources of power and greatness to a degree not possible to any other nation, excepting only the United States: (1) natural resources, (2) low cost means of mechanical production, and (3) low cost means of internal transportation. The development of the last two is interdependent and must proceed with a fixed relation to each other. In studying the problems of mechanical production and transportation the United States is the only country suitable for the Russian model. The countries of Europe are far too small to present all the multiplex and complex factors that must be dealt with in developing a transportation system for Russia that will bring all of its great expanse of territory into quick and low-cost communication, each point with every other. The system of the United States is unrivalled in extent, completeness, prompt, efficient and low-cost operation. It is far

beyond the power of any other nation to duplicate or to equal it. Russia or China may build and develop with all the energies that limitless resources can command; they may call to their service our machines, mechanics, engineers and great organizers of industry, but before the systems they may develop can become a physical fact that will be the equivalent of the existing conditions in the United States in this year 1896 the progress here made during the time required for the Russian or Chinese development will leave those countries followers, not leaders, in mechanical industrial development. It is this fact which gives supremest satisfaction to every intelligent American citizen when representatives of foreign governments come to the United States to study its industrial progress and conclude by contracting for the best appliances that can be here found, to be used in their own countries.

Only recently an English representative has been studying American shipbuilding. A representative of Japan has been investigating American electrical apparatus and appliances. To-day special agents of China are here studying arsenals, armories and shipyards, and representatives of Russia have closed contracts for and now have in transit American machinery for locomotive building, rolling mills and the manufacture of iron pipe, plate, engines, etc. This is but the beginning.

The vast empire of Russia is practically undeveloped. The general policy of the Russian Government, which enforces and exercises a monopoly of the transportation business throughout the empire, is to develop within itself the means of constructing everything that its transportation system may require. In behalf of this policy the initial plant for locomotive building, all the machinery for which has been purchased in the United States, is located at Nijni-Novgorod, near St. Petersburg. Its capacity is 200 locomotives annually. The plant for the manufacture of iron pipe goes to Novorossisk, on the Black Sea.

In this connection it is of interest to state that the exports of American locomotives for the year 1895 were valued at \$2,400,000, and for the first seven months of 1896, to August 1st, at \$1,922,000. At this rate the year 1896 will show exports of locomotives to the value of \$2,853,000.

THE PHILADELPHIA COMMERCIAL MUSEUM.

IT is announced that the formal opening to the public of the Philadelphia Commercial Museum will take place in the latter part of the coming November or the first part of December. This will be an occasion of much interest to the producers of foreign countries who have placed samples of their products of raw materials, for which they seek a market in the United States, where they may be manufactured or consumed.

Director Wilson, who is the moving spirit of this enterprise and to whose energy and intelligent direction its existence and present perfection is due, is entitled to much praise for the manner in which he has planned and carried out the work.

Foreign countries producing such raw materials as may be manufactured or consumed in the United States, and are not already represented in the exhibits, will serve the interests of their people well by making such exhibits at the earliest practicable date. This commercial museum is a permanent organization and will grow in usefulness year by year.

AN AMERICAN BICYCLE MANUFACTORY IN PARIS, FRANCE.

IT is announced that E. C. Stearns & Co., bicycle manufacturers of Syracuse, New York, U. S. A., have recently established a branch manufactory for the production of their wheels in Paris. This will give the French people an opportunity to study the superiority of the American automatic standardized machine, both by seeing it work and using its products. Other Syracuse bicycle manufacturers are establishing selling agencies throughout Europe and are preparing to demonstrate their American ability to push sales. This is an American invasion that means business.

AMERICAN INVASION OF IRELAND.

AT THE present time Americans are invading Ireland—not as Fenian raiders, to break the bonds of the United Kingdom, but as bicycle manufacturers. This invasion is met in true Chinese style by English manufacturers and merchants—all noise but no execution. They attempt to show that the lightness of American wheels is at the expense of strength, ignoring the fact of the superiority in tensile strength of American iron over English, thus making the same mistake that has led to the confusion of others in other lines of machinery or vehicles. It is not expected that English manufacturers will see perfection in the shape of the tubes, the form of the wheels, the crank bracket bearings, the width of the tread, the chain adjustment, the sufficiency of the mud guards, the use of single tires, the wooden rims and light chains of American wheels, but if bicycle riders do Americans will feel consoled for the sharp thrusts of their English competitors and will devote themselves to making sales while English makers occupy themselves with making protests.

After pointing out that American wheels for the English-Irish market should have a gear case if desired, that detachable or single tube tires should be optional, and that an easily detachable brake and mud guard should accompany each machine, Mr. A. Donn Platt, United States Vice-Consul at Dublin, very sensibly says: "American manufacturers should refuse to alter small details of construction, as the foreigners will ultimately come to recognize the superiority of American machines."

The invasion of 1896 leaves American manufacturers in the enjoyment of much vantage ground, which will serve them well in 1897. Next season a "rush" may be expected all along the line.

AMERICAN PAPER MACHINERY FOR JAPAN.

IN THEIR progress toward commercial independence the Japanese show great sagacity in their appreciation of machinery. About half the paper used in Japan at the present time is imported but by a liberal importation of American paper-making machinery the Japanese hope, within three years' time, to manufacture all the paper required in the Empire. There are now 12 paper mills in Japan, of which the Oji Paper Company, of Tokio, is one of the largest. Mr. H. Okawa, director of this company, has recently visited the paper mills at Appleton, Wisconsin, U. S. A., for the purpose of learning in what features he may best increase the capacity of his company's plant.

Mr. Okawa, as reported by the *Paper Trade Journal*, says that "ordinary print paper which sells in the United States for about 2 cents commands in Japan a price equivalent to 3 cents, American money." Speaking of wages he said, "An American machine tender can buy 100 pounds of the product of the mill in which he works with one day's wages, while a Japanese machine tender will have to work 12 days to buy 100 pounds of the product of the mill in which he is working." Taking this comparison as indicating the difference between Japan and the United States in industrial development, it is clear that a long time will be required to enable Japan to reach the present American standard of efficiency, in which every skilled workman is an engineer who superintends the operation of labor-performing machinery.

By no other agent will Japan be assisted so much as by free and large importations of American labor-performing machinery. This may seem an untrue statement when it is considered that labor is now so cheap in Japan that it is hardly worth saving. It will be understood, however, when it is pointed out that Japanese labor is not really skilled labor in the American sense, and that it must become skilled before it can operate American labor-performing machinery at its highest rate of efficiency. When the skill so to operate machinery is acquired, and because of this skill wages have been advanced several hundred per cent. and the standard of living correspondingly raised, Japanese labor will begin to be really low in cost when compared with achievement.

With a development on these lines the Japanese domestic mar-

ket will increase in conformity with its rise in industrial efficiency. The calculation, based on present consumption, that a certain increase in capacity of the Japanese paper mills will in three years supply the total domestic demand for paper will in three years be proven erroneous. The increased capacity will supply only the present demand, leaving the growth of demand to be supplied by importations, which will come in an increasing volume from America.

AMERICAN-BUILT STEAMSHIPS.

STRENGTH, speed and economy in operation are the essential points of superiority sought by all builders of steamships. Until recently these advantages have been thought to be the birth-right of English-built ships, but such is the case no longer.

Supremacy in yachting has long been a large item in American pride.

While the unthinking public looked upon the performances of American yachts as "sport," experts were studying their models. The fundamental principles of shaping hulls to offer the least possible resistance to water are the same for sailing vessels as for steamships. It has thus happened that progress in yachting has proven a helpful guide for American skill in molding steamer hulls.

The strength of an American-built steamship is never seriously challenged. The best types of them have demonstrated their speed ability, so that superiority in that respect is easily settled by consulting the records of passage performance. This speed record is not attributed exclusively to the design of the hull. After allowing to that factor all that can be justly claimed for it there is a wide margin uncovered which can be accounted for only by efficiency of machinery. It is here that American skill has shown the greatest advance. The great triumph of American swift steamers is in the fact they can develop remarkably high rates of speed *with a smaller horse-power and a much smaller coal consumption* than those of their English rivals. The result of this is a saving in running expense and in the consequent increase of profit for their owners. Demonstrated superiority on the three essential points of strength, speed and economy in operation is something of which the ship-builders of the world must take notice.

This has already been done by the English builders, who have had a commissioner in the United States for some time to study the art of American shipbuilding. He has recently returned to England. That he will have something of vital interest to say to British ship-builders is certain. The fruit of investigations will undoubtedly appear in due time, when new British steamers come forward to dispute supremacy with the recent products of American shipyards.

But the art of shipbuilding is far from being in a state of arrested development in America. While the English are catching up with the best of to-day American builders will be going ahead and will keep the margin of advantage in their favor. These facts should be borne in mind by buyers of steamships.

THE GUATEMALAN EXPOSITION, 1897.

THE GUATEMALAN EXPOSITION of 1897 will open on March 15th. Space can be secured until next month (November 15th). It is reported that England, Germany, France and Italy have taken up much of the space, but it is expected American manufacturers will not stand second best.

Guatemala and its neighboring States buy cereals, flour, wine, canned and dried fruits, which are produced in perfection and abundance by the Pacific States, and cotton goods, hardware, machinery, tools, furniture, etc., which form a large share of the manufactured products of the United States. This exposition offers another opportunity for American manufacturers to show their goods in the country where they can be sold. That it is good business policy to do this is clear to every observer of the way in which orders are obtained most successfully. All South American visitors to the Guatemalan Exposition should study the American exhibits closely, as they will there find that which will serve their purposes best.

CIVILIZATION TAUGHT BY MACHINERY IN CHINA.

CHRISTIANITY bases its claim for a better future life upon its ability to make the present life better. This is the force that is driving forward the development of civilization throughout the world. When American missionaries in China seek to gain the confidence of the Celestials by showing them how to make this life better, they will open a road to the understanding of what will tend to a better future life. A plan of practical Christianity has been developed by the Pekin University, an important educational institution conducted under the auspices of the American Methodist Episcopal Mission. A museum has been opened in one of its buildings, devoted to the exhibition of foreign machinery and mechanical appliances. This museum is visited daily by increasing numbers of the better classes, who are interested in acquiring a knowledge of foreign manufactures and inventions. It is believed this museum will be an important means of advertising and introducing the products of American industry in China. The authorities of the museum desire to receive and exhibit working models, photographs or drawings of machinery and inventions, or specimens thereof, such as plows, ships, firearms, cannon, electrical machinery, cars, locomotives, windmills, looms, printing presses, wagons, engines, etc. Each exhibit which may be presented to them will be marked in Chinese with the name and address of the maker, together with description and price thereof, if desired, and capable translators will explain their use to inquirers.

This is an opportunity for American manufacturers to carry out the policy always advocated by THE AMERICAN EXPORTER of exhibiting their goods in the place where they expect to make sales. Pekin, with a population of 600,000, is the literary and political centre of the Chinese Empire. There is no better place than this from which to reach the whole Chinese market. Advertising there should be more profitable than in any other city in China. The Pekin University is the centre of a wide influence. It occupies commodious foreign buildings lighted by electricity and is attended by hundreds of young men in search of Western learning. Its museum is conducted solely for the purpose of increasing the usefulness of the University and attracting the attention of inquirers. Exhibits of the character described will be gratefully received and will be as advantageously employed for the benefit of exhibitors as circumstances will permit.

Correspondence on this subject and articles for exhibition may be sent to the Pekin University, Pekin, China, or to Mr. Charles H. Taft, Treasurer of the Pekin University, No. 78 William street, New York, and under agreement with the I. M. Customs will be imported to China duty free.

Those American manufacturers who want trade in China should avail themselves of this instrumentality for securing it.

GERMAN TESTIMONY.

WHEN English manufacturers complain of being undersold by Germans they unconsciously advertise their inability to meet German competition. When, in turn, Germans complain of being undersold by Americans they not only show their own inability to compete with the manufacturers of the American Republic, but also prove that the English are entirely out of the trade.

A case in point may be quoted from the official report from the German Consul at Hawaii. He says: "The imports from Germany of tools, water pipe and cordwainery have entirely ceased, as the difference in price in favor of America was much too great. For the same reasons our trade has largely fallen off in rod iron, bar iron and rolled fencing wire."

This statement is published by a British trade journal as a warning for English manufacturers. If foreign importers in all countries make a correct deduction from it they will regard it as an item of advice informing them where the best value for price paid is given to buyers of tools, cordwainery, rod iron, bar iron and rolled-wire fencing.

AMERICAN ELECTRICAL BRAINS.

IN the statement of manufactured exports one item, that of "electrical and scientific apparatus" was purposely omitted in order to give it special mention.

Only a short time ago a few thousand dollars would have bought the world's total output of electrical apparatus. In the schedule of American exports this item had reached the handsome figure of \$1,500,000, while for 1896 a gain of 66 per cent. over these figures is shown.

Americans have a long-distance lead of the world in electrical development because the business is being pushed in the best possible way by men of electrical brains, sagacious and courageous, ready for any undertaking, no matter how great and careful, of every detail, no matter how small.

Most people now living can remember the time when the electrical industries as now developed were unknown. Now the aggregate of the business in the United States runs beyond one hundred millions annually and it is increasing with unchecked momentum.

Since the Declaration of American Independence Americans have been using their brains to make the people of the world freer and more comfortable. It will not be long before, in the heart of Africa, where the slave trade once passed, leaving death and misery to mark its route, American electrical machinery will be doing the work once done by "slave power," better and cheaper than it was then done. It is thus that freedom will finally become the birthright of every person in the world. Brains will do it. American electrical brains, benevolence and fair trade are the greatest forces in the world's business and in the civilization of the world.

The Commercial Museum of the American Missionaries in Peking, China, lighted by electricity and exhibiting American machinery as a means for making this life better and thus a reasonable preparation for a better future life is one of the most striking moral and economic facts recorded during the closing years of the nineteenth century. It is the opening of a new era for China that will be largely dominated by American electrical brains.

A NEW APPLICATION OF ELECTRIC HEAT.

IN the past oil wells, clogged with paraffine, have been cleared by the use of torpedoes. Mr. F. A. Flanagan, of Washington, D. C., conceived the idea of removing the paraffine by the use of electric heat. He constructed a heater in the form of a cartridge, 4 feet long and 2 1-4 inches in diameter, over which he placed a galvanized iron jacket, which almost fills the casing. The remainder of his outfit consists of a reel of insulated cable, a dynamo generating a 125-volt current, and a small steam engine to operate the dynamo, all of which can be mounted on the ordinary teamster's wagon and hauled to any point in the oil field with a single team of horses.

The first experiment was made on a well in Pennsylvania that had been pumping six years. During this time several torpedoes have been used in the well to eradicate the paraffine and increase the flow of oil. The sucker rods and tubing were removed from the well and the electric heater lowered to the 100-foot rock, the same as a torpedo, and connected with the dynamo by the insulated cable. The metallic cartridge was subjected to the greatest heat possible without melting it. It was removed in about four hours and the well set to pumping again. The results are most gratifying, and demonstrate without a doubt the practicability of the invention. It is stated that the well has increased its production of oil 75 per cent. and produced 3 1-2 barrels of paraffine, a result that neither the inventor nor the well owner anticipated on the first trial. This experiment may lead to other developments in the management of oil wells. The work now sure to be undertaken in this direction will be worth watching.

—The United States Consul at Maracaibo reports to the State Department the establishment there of an American steam laundry with \$20,000 capital. Hitherto washing was not returned for two or three weeks, and as the citizens enjoy well-starched shirt bosoms the venture has been a great success.

New Steamship Lines.

THE Compagnie Generale Transatlantique will next month inaugurate two steamship lines between this port and the West Indies. These will be semi-monthly freight and passenger service. Fort de France, Martinique, will be the West Indian terminal of both lines. One route will be to that port *via* Cape Haytien, Port au Prince, Curacao, Porto Cabello and Laguayra, returning *via* the same ports. This service will be commenced on October 15th, the steamer Ville de Brest making the first trip.

The other line will be to Fort de France *via* Port au Prince, Porto Plata, Samana, Santo Domingo, Mayaguez, Ponce, St. Jean de Porto Rico and Point-à-Pitre, returning by the same route. The steamer Ville de Bordeaux will make the first passage over this line on October 30th next.

The steamer Ville de St. Nazaire will also be employed in this service. These vessels are of about 3,000 tons each, and have accommodations for about 50 first cabin and 30 second cabin passengers. They were formerly employed in the company's service between France and the West Indies. This latter service will not be discontinued, as the Compagnie Generale Transatlantique is under contract with the French Government to carry the mails between France, West Indian, Mexican and South American ports.

The principal outward freight of the new lines will be breadstuffs, and the return cargo will consist mainly of sugar, tobacco, hides, coffee and cocoa.

The French Line has also under contemplation at the present time two other important services, one, which has already been mentioned in these columns, between Philadelphia and Marseilles, and another which is of more local interest, between New York and Mediterranean ports. Up to the present time, however, no final arrangements have been completed.

A rumor has recently been current in steamship circles here that a new line from New York to the Mediterranean was to be established by the Charges Reu is, a French steamship company which operates several services between Havre and Mediterranean ports. It was learned on good authority that this company has been considering a freight and passenger service between New York and Havre, and also a freight service between New York and the Mediterranean, but as yet nothing has been decided upon.—*New York Journal*.

New Steamers for Southern Trade.

THE facilities for transporting American merchandise to the Mexican and West Indian markets will be greatly increased by the addition of several vessels, now under construction or recently contracted, for the trade between the North Atlantic and the ports of the West Indies and Mexico. One of them, which will be of considerable interest, inasmuch as she will be the largest vessel in the West Indian trade, is a steamer of 5,700 tons dead-weight capacity, now being built at Short's yard at Sunderland, England. Gow, Harrison & Co., of Glasgow, are the owners. The vessel has all the improvements of a modern cargo boat. The boilers are provided with appliances for forced draught. A special feature of the vessel will be five unusually large hatches, which will be provided with two large winches each. She is on a long-time charter held by W. D. Munson & Co., for their West Indian and Mexican trade.

A smaller, but very finely constructed vessel, will be one now in construction for the New York and Cuba Mail Steamship Company. She is a 1,000-ton vessel, and will be fast and exceedingly light draught. It is expected that she will be ready for commission in December.

R & C. Allan have ordered two passenger steamers of about 2,000 tons each. These will be employed in the services of the Boston Fruit Company, between Jamaica and Atlantic ports. They will be 15-knot boats and will be provided with all modern conveniences. They will be launched in December. They are chartered for four years through Clark & Service, and Bennett, Walsh & Co.

Another passenger steamer for the West Indian trade is being built. She will be a 12-knot boat, and has been chartered for three years.

A New Export Point.

THE official port circular shows that in September there will sail from Montreal 20 steamers for Liverpool, 11 for Glasgow and 12 for London. It might be well for the New York Produce Exchange, while worrying about the differentials Philadelphia, Baltimore and Newport News have on export business to turn its eye toward Montreal, which has shown nearly as remarkable an increase in export tonnage as has Galveston or New Orleans.

Five years ago Montreal was hardly considered a rival of the principal ports on the United States coast in the transatlantic carrying trade. It is now reported that all the available space of steamships to sail from Montreal has been engaged at rates highly remunerative to the steamship companies.

IN one day the Diamond Match Company, at its factory in Barberton, Ohio, U. S. A., made 12,356 gross of boxes of matches, which means 1,779,264 boxes, and as 100 matches are in each box, making the day's output 177,926,400 matches. At that rate the factory can produce in a year 64,943,136,000 matches, which means 927 matches a year, or nearly three matches a day for each one of the 70,000,000 inhabitants of this country. All this work is done by automatic machinery and 340 workmen. The largest match factory in Great Britain is said to employ 8,000 workmen, but it cannot equal the output of the 340 workmen and the automatic machines in the Barberton mill. The machines used by this company have added \$125 to every share of the capital stock.

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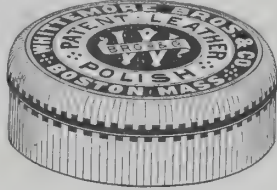


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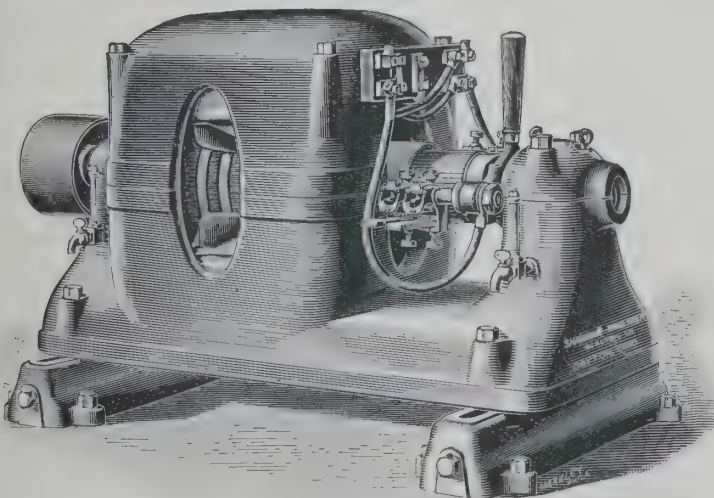
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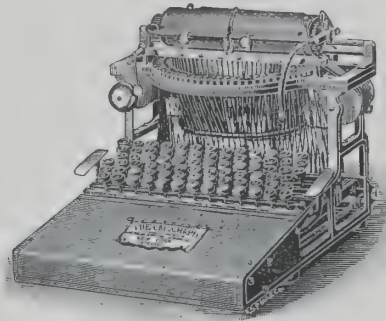
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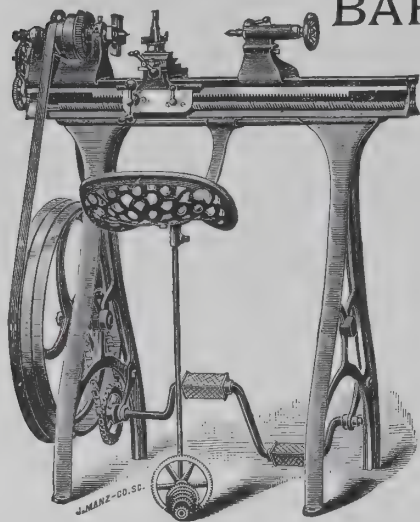
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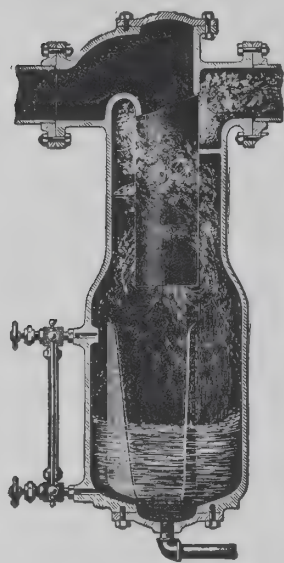
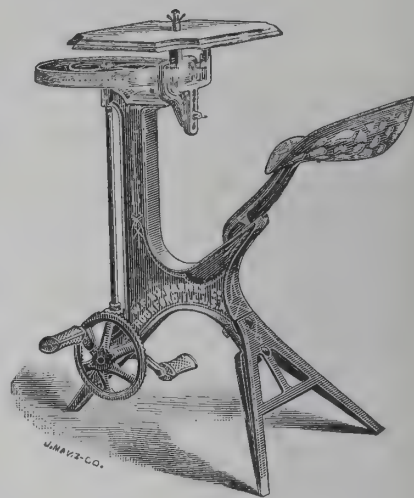
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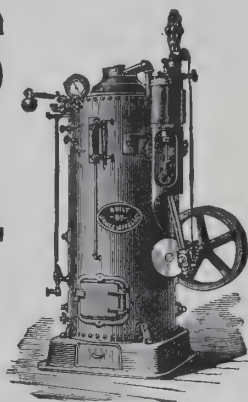
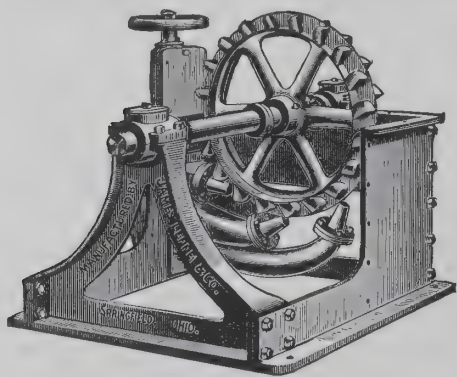
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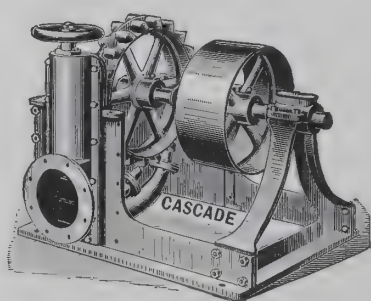
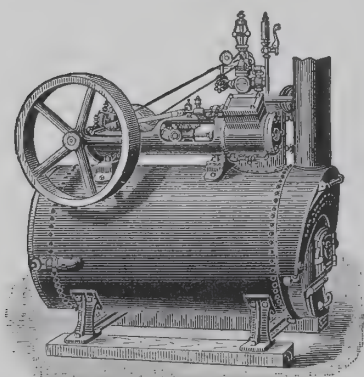
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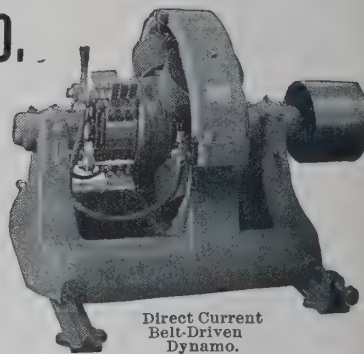
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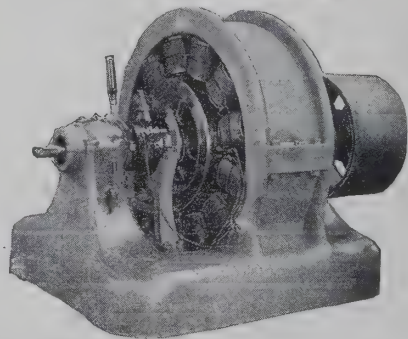


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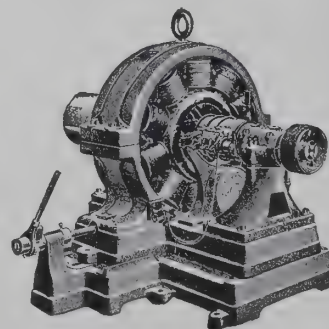
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ELECTRICAL APPARATUS OF ALL KINDS FOR
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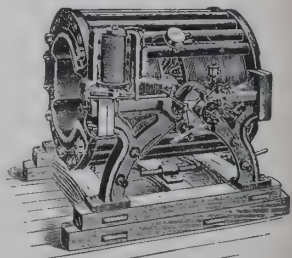
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Alternating Current Dynamo.

Estimates sent free
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GENERAL ELECTRIC CO., 44 Broad St., New York, U. S. A.



DEVOTED TO THE FOREIGN TRADE IN MACHINERY AND HARDWARE.

Larger Machinery Exports.

MANUFACTURERS of machinery in Worcester, Mass., says the Boston *Advertiser*, are feeling more encouraged over the outlook for their business than they have at any time for several months. As a rule they have been fairly busy, owing to the export orders that they have been filling, while some shops have been obliged to work overtime to get the machines out according to contract. This applies especially to makers of engine lathes and other iron-working machinery, for which there has been a marked foreign demand of late.

The H. C. Fish Machine Works said recently regarding the present situation:

"We do not find actual business in machine tools in this country at all encouraging. There seems to be a fair prospect for a large volume of trade, if the money question is once settled, but almost everybody we meet, while hopeful for coming prosperity, yet is not confident enough to take advantage of present low prices.

"We feel that the present rush after foreign trade will prove a lasting benefit to the machine tool business. American manufacturers have shown too little interest in export work in the past. The addition of foreign markets will make us much less sensitive to the influence of home politics and, with our own trade, will make a market less subject to fluctuation.

"We are getting ready for a rush of business which we feel sure will come next Winter, and already have all the stock on hand that we can store."

The booking of a large order for American tools for a bicycle concern of Amsterdam is reported by the *American Machinist*, so that the goods that are being made in this country for export are being pretty widely distributed.

But the activity in export manufacture in metals is not confined to machinery, but extends to hardware as well, and American-made articles of this class are supplanting those of English manufacture to a large extent. This is the case particularly in Australia and Canada, and this state of affairs is accounted for by the English trade papers on the ground that our manufactures are of more recent growth, having, on that account, the advantage of the latest machinery and appliances, whereas the English manufacturer is often the inheritor or successor of an old business with old machinery.

Wire nails is still another manufacture which shows a material gain in export trade during the past year, and more especially during the past six months, particularly with Japan, China and Australia. Up to within a comparatively short time the greater part of the trade with these countries has, it is said, been handled by German manufacturers, but American competition is now being felt by these makers to a considerable extent. There has also been a considerable increase in exports of cut nails, but this has not been so marked as in the case of wire goods.

One reason for the increase in the trade of American houses is the fact that prices of German nails have been advanced somewhat during the past year, while some American houses have made usually low prices on export goods in order to keep their plants running. The principal exporters from this country are members of the nail combination, or the trust, as it is generally known, but the pool does not fix the prices of export goods, which are considerably lower than the domestic prices.

The following figures, taken from government statistics, show the total exports of nails for a series of years past. The official figures do not separate exports of wire nails from those of wrought, horseshoe and other than cut nails. Spikes are also included in the figures, and tacks as well, in the tables for wire nails. The figures may, however, serve as a means of comparison:

	Cut		Wire and all other.	
	Pounds.	Value.	Pounds.	Value.
1896	20,730,260	\$428,630	8,031,927	\$321,055
1895	16,895,428	283,646	4,367,267	210,192
1894	16,730,643	330,118	3,233,776	180,607
1893	15,604,347	330,554	2,300,501	158,093

It is the opinion of some members of the trade that exports will continue to increase. A representative of one of the largest manufacturing concerns said: "We can now produce nails about as cheap as they can be made in Europe, but we are at a disadvantage in the matter of freight rates. If American makers should get as favorable rates as German makers get their trade with all countries would increase greatly.

—The schooner D. P. Dobbins, with a cargo of 800 tons of wire rod from Chicago for export, arrived at the Port of Erie, Pa., on September 28th. The cargo was shipped via Philadelphia to Manchester, Eng.

The Hardware Export Trade.

THERE has for some time past been a serious falling off in the export trade of British hardware from the United Kingdom to foreign countries, so much so that the Wolverhampton Chamber of Commerce recently appointed a special commission to consider the question of foreign competition. Fifteen years ago, in 1882, British exports of hardware and cutlery aggregated \$20,500,000; but, for 1893 and 1894, they had dropped around \$10,000,000 each year in value. Part of this heavy decrease is undoubtedly attributable to the trend of lower prices in all lines of goods, but it further appears that other countries are securing the trade formerly held by the British hardware manufacturers.

The Wolverhampton commission decided to restrict its investigation mainly to the questions of wages, hours of labor and cost of transportation, extending its inquiries into Germany, Belgium and France. It seems that but little competition is experienced from France, the chief invaders of former British markets being Belgium and Germany, where the commission found "lower rates of wages, longer hours of labor and cheaper rates of carriage." But these were not the only cause of the trouble. Some foreign manufacturers, in order to minimize the cost of production as far as possible, run their factories to the fullest possible extent. They thus make a surplus, over and above what their home trade demands, and sell this surplus for export. The report states that "under a system of protection a German manufacturer, for example, is assured of a certain sale in his own country at remunerative prices, and can therefore afford to export any surplus stock at cost price, or possibly even at a small loss."

Our exports of hardware have increased from \$1,235,285 in 1886 to \$2,483,666 in 1895, and \$3,311,738 in 1896 fiscal year. Had the Wolverhampton commission extended its investigations further from home it would doubtless have found that American hardware, by reason of its superiority, is, to a considerable extent, supplanting that of British make. This is particularly the case in Australia and Canada. And the reason for it appears in the report, namely, that "foreign manufactures are of more recent growth, and they have on that account the advantage of the latest machinery and appliances, whereas an English manufacturer is often the inheritor or successor of an old business with old machinery." With this advantage, which we most certainly possess, there is another incentive to our manufacturers to progress in expanding their foreign trade as they have done in the last couple of years. Again, the English claim that the decimal system of weights, measures and currency is against their more ponderous methods of measurement and finance. With prices and terms even equal, these little points and advantages will sell the goods—as the English hardware manufacturers have discovered. The conclusion of their report, referring to skilled foreign labor, is of such interest that we reproduce it:

"With the exception of some of the higher branches of skilled labor industries, in which England still holds a position of pre-eminence and superiority, a foreign workman can, and in reality does, produce just as good an article, both as to construction and intrinsic merit, as an English workman. It may be even doubted whether in respect of some industries involving taste, artistic design and adaptive skill, for which by reason of his superior technical education he is specially qualified, a foreign workman should not be classed not only as an equal but even as something more. It is, in any case, the opinion of the committee that foreign, and more particularly German, competition in the hardware trades should be regarded as a serious and increasing force, well worthy to be opposed by the best energy, enterprise and ability of which English manufacturers and English artisans are capable."—*N. Y. Journal*.

FOR a long time woodworkers have felt the want of a sandpapering device that would sandpaper molding and other articles of irregular shape. Many trials have been made to get up something that would answer this purpose; in fact, various mechanisms have been designed to accomplish this result, but it has been found impossible to do it as economically as by hand and preserve the shape and well-defined contour of the articles sandpapered. A machine has been patented by a Mr. Walter Black, of Chicago, which is claimed to be particularly suitable for sandpapering irregular surfaces, but whether it will prove to be any better than its predecessors practical experience only can demonstrate.

—It is better to buy first-class machines and have few repairs than to buy cheap machines and have many repairs. And it is cheaper, too, in the end; much cheaper if the time the machine is idle on account of repairs is charged against it.

Important Shipments to Russia.

THE large orders which have recently been received from Russia for American machinery is proof that the United States, in the opinion of the Russians, lead the world in the production of modern machinery. If we can satisfy Russia we should be able to convince other countries of the superior merits of our machinery. There is a great future for our manufacturers who avail themselves of the openings now made in foreign markets for the introduction of labor-saving machinery and tools such as are being made and used in the United States. All the Philadelphia papers of October 1st contain accounts of two important shipments of machinery which are being made to Russia on September 30th. The British steamer *Lolcham* sailed for St. Petersburg from that port with an entire locomotive building plant valued at \$500,000, and within the following week the bi-steamer *Henley* left with the pipe plant of Messrs. Morris, Trasker & Co. which will be set up at Novorossick on the Black Sea. A competent squad of American skilled mechanics will soon start for that city to erect and start the works. This company has already secured the great pipe contract for the transmission of petroleum from the Russian Government, for which American and European makers had been in competition for a year. The contract calls for 215 versts (144 miles) of pipe line across the Caucasian peninsula to add as a feeder to the railroad connecting the Black and Caspian Seas.

In order to make deliveries of pipe in the time required, the Nicopol Mariopol Company purchased this entire pipe plant, with the exception of engines, boilers, gas-producing furnaces, etc., and it will be entirely new when shipped. It is expected within 60 days after the arrival of the steamer bearing these materials the pipe will be in operation and every effort will be made to anticipate dates of delivery for the pipe. The contract amounts to 10,000 tons of pipe, to cost 3,000,000 roubles.

The American Locomotive Works will be opened as a department of the Sormovo Iron and Steel Mechanical Works, at Nijni Novgorod. The Sormovo Company has been engaged for years in the manufacture of river steamboats, freight and passenger cars patterned after the American style, and boilers, etc. The Minister of Finance gave the company permission to increase its capital stock by 3,700,000 roubles on the condition that an understanding with Americans be reached so that American designs, machines and management could be employed.

This company has a paid-up capital of 3,000,000 roubles in gold, equal to about \$2,275,000 in American money, and the object of the company is to secure control of valuable manganese mines belonging to the Grand Duke Michael Nicolaevitch, the uncle of the Emperor. The mines are located at Nicopol, in Southern Russia, and consist of 16,000 acres of land, with all the buildings and appurtenances necessary for running. These mines are now under American management.

The manganese ore will be taken to Mariopol, on the Sea of Azov, where the company has purchased 800 acres of level ground, on which there is now being located a steel plant, to consist of blast furnaces, plate mill, rail mill, pipe plant and other departments. These works will be under the management of H. S. Loud, formerly of the Illinois Steel Company, with a staff of American engineers.

The opinion of competent men is that this plant, American throughout, will be second to none in the world. It is expected that the business of building locomotives will prove very profitable.

The German Barb Wire Export.

THE German export trade in barb wire, especially to Japan, is suffering greatly under the pressure of American competition, says one of our German exchanges. The Hamburg exporters are being forced to buy American barb wire, for their foreign customers have commenced to make their purchases in this line directly in the United States, thus evading the Hamburg middleman. Confronted by the alternative either to lose this trade or to buy American barb wire themselves they decided to take the latter course because they were afraid that the loss of this trade might result in the loss of trade in other lines, for it is a well-known fact that business relations once formed will extend to other articles. All that is left to Hamburg firms from the formerly large export trade in barb wire is the prospect to sell the article at retail in 50-coil lots. Such orders are being received. Matters in the wire-nail export are exactly similar. The Americans export wire nails via Hamburg to Japan at figures which the German wire nail manufacturers cannot attempt to meet.

Power of Modern Explosives.

A REMARKABLE exhibition of the power of modern explosives occurred recently at Marquette, Michigan, in firing an iron range in one of the open pits. The amount of ore brought down from the east side of the pit is estimated at from 10,000 to 13,000 tons. Previous to the blast proper some 300 pounds of "giant powder" were exploded to loosen the ground, doing its work so effectually that some of the cracks in the ore were two inches in width, with, of course, many smaller ones. Immediately back of the larger crack, about 40 feet from the end of the hanging, a large hole, 35 feet in depth, had been drilled, and in this hole over half a ton of black powder was placed. When the blast went off the ore ahead and 40 feet on either side of the hole tumbled over into the huge pit. The latter is of mammoth size, indeed—some 150 feet in depth and more than 500 feet long by 400 feet wide; the entire east side is in solid ore, as is also a portion of the south side.

The Widening of Our Markets.

IF there is one thing more than another which the prevailing depression in business has enabled the wide-awake American manufacturer to study, it is the growing importance of our steadily increasing export trade.

The lessened demand that has existed here for the products of our prolific factories has made the necessity for new and appreciative outlets an extremely pressing one. Our manufacturing methods differ in essential particulars from those of any of our foreign competitors, in that we keep up-to-date in the fullest sense of the word. The inventive ability of our skilled workmen is constantly on the alert to discover some labor-saving device which, while in no way injuring the quality of the manufactured product, introduces features of economy that permit us to undersell in the world's markets, without any need of placing our workmen on such wages as either make a pauper of him, or else deprive him of the ordinary comforts to which intelligent labor at fair wages has become accustomed.

It is a national trait with us that, as manufacturers, we are ever in advance. Let us know the requisitions of any country where a trade can be fostered and encouraged, and we at once build our factories, stocking them with the latest and best approved machinery, to accomplish the desired result, in which everything will be studied with a view to economy of cost on the production, whether it applies to the receiving, handling and storing of materials needed, or the packing, shipping and ultimate distribution of the goods made.

We have no fear of results, our methods being admittedly the most modern and advanced when compared with the competing forces arrayed against us.—*From Hardware.*

Japan Wants American Ships.

IT appears that the Japanese Government has decided to order two cruisers from American builders, one from the Cramps and the other from the Union Iron Works, of San Francisco. The Japanese are intelligent and not the kind of people to "buy a pig in a poke." They have been influenced in their determination to order some ships of us, no doubt, by the desire to cultivate a friendly feeling with the United States; but much more by the result of their observations of the navies of the world, and of the performances of the vessels constructed in different countries.

This, of course, applies to naval vessels particularly, but includes those of the class that, while employed in the merchant marine in time of peace, are intended for hostile service in time of war. In other words, the *St. Louis* and *St. Paul* of the new American line have doubtless had something to do with their decision, though not, perhaps, as much as the cruiser *Brooklyn* or some of those floating forts of the White Squadron that are beautifying the bay at the present time.

American Lamps in Paris.

THE terrible use made by the Communards of 1871 of petroleum for conflagrative purposes produced such an impression on the French mind that people recoiled even at the mention of kerosene. So the American kerosene lamps, which were then just beginning to get a foothold in France, were relegated to the limbo of dangerous innovations. Then came the exhibitions of 1878 and 1889, with our particularly good show of new, improved and artistic lamps. The memories of 1871 were quickly forgotten, and to-day the use of candles and the old "pump lamps"—gas has never been a general means of domestic lighting in France—has gone down before the American substitute, which has not only invaded the Parisian bedroom and parlor, but has even found favor in the chateaux along the Loire and has worked its way into the plain homes of the remote villages. One of the American lamp exhibitors received so many orders during the exhibition of 1889 that he established a branch store in the best part of commercial Paris where he has been doing a thriving business ever since.—*Lippincott's Magazine.*

For Accurate Timing.

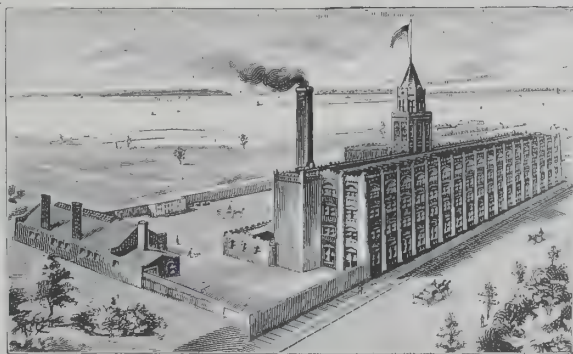
A NEW timing instrument called a "pendulumchronoscope" was recently exhibited at the Brooklyn Institute of Arts and Sciences. It is said to measure accurately down to the one thousandth part of a second, and is expected to entirely supplant the old style chronoscopes in the scientific laboratories. The speed of a cannon ball can be determined by the new timer, we understand, and it will tell the lapse of time between the firing of a revolver and the starting of a runner, or determine how long it takes a boxer to deliver a blow. It is claimed to be the most remarkable timing instrument in the world.

A RETAIL hardware dealer in England says that 90 per cent. of the files he sells come not from Sheffield, but from America, and he explains the anomaly in the *Ironmonger*. The American manufacturers, it seems, keep large stocks in London and fill orders with great promptness. The American price lists give exact information regarding sizes and grades, and promise delivery in three days from London. A Sheffield price list requires prolonged study to comprehend it, and when an order is sent to Sheffield it may not be filled for four weeks or even eight weeks. This tardiness in filling orders, the writer says, has been a matter of weekly experience for the past 20 years.

—The Greenfield Engine Works, East Newark, N. J., have recently shipped two metal presses to Germany. They report their business exceedingly good at present.

The Largest Water Meter Manufacturers in the World.

CROWN
NASH



EMPIRE
GEM

TIME TRIES ALL—METERS AS WELL AS OTHER THINGS.

The Meters made by this Company for all kinds of service have stood this test for many years and have proved their superiority over all others. Over **170,000** in use. The largest and most complete line of Water Meters in the World.

NATIONAL METER COMPANY

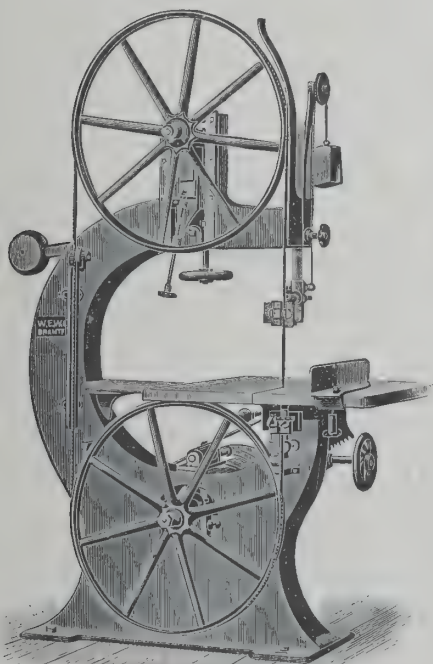
298 Broadway, New York, U. S. A.

[OCTOBER, 1896.]

CHICAGO.

BOSTON.

LONDON.



No. 3.—36-inch Wheel. Weight, 2,000 lbs.

BAND RE-SAWS.

No. 5 Band Resaw.—48-inch wheels; saws 24 inches wide, 5 to 40 feet per minute. Resaw swings clear of machine when required. Weight, 4,500 lbs.

No. 6 Band Resaw.—48-inch wheels; take saws to 3 inches; cuts 30 inches deep. Weight, 4,300 lbs.

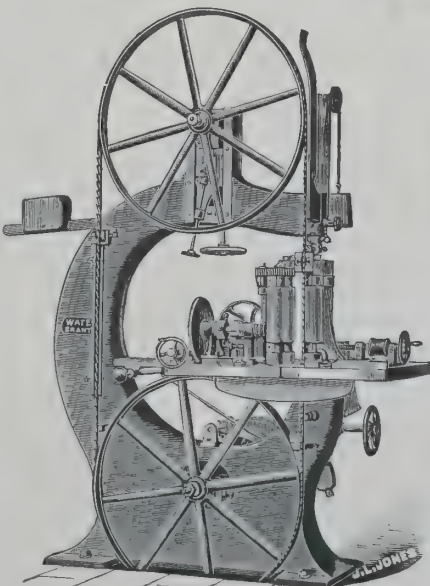
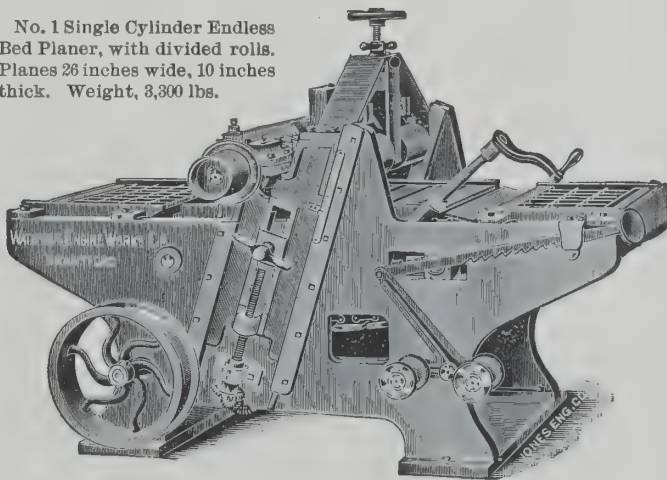
No. 7 Band Resaw.—54-inch wheels; 4-inch saws; cuts 30 inches deep and to center of 10 inches. Weight, 5,300 lbs.

OTHER SIZES MANUFACTURED.

FULL LINE OF

Saw Mill Machinery.

No. 1 Single Cylinder Endless Bed Planer, with divided rolls. Planes 26 inches wide, 10 inches thick. Weight, 3,300 lbs.



No. 4.—40-inch Wheels and Removable Resaw. Weight 2,750 lbs.

Wood-Working MACHINERY.

No. 1 E. B. Planer. Weight, 3,300 lbs.; like cut.
No. 1 Double Cylinder E. B. Planer. Weight, 5,300 lbs.
No. 2 E. B. Planer. Weight, 2,600 lbs.
"Champion" Combined Planer, Matcher and Moulder.
Planes 24 inches wide up to 6 inches thick. Best all-around machine.

MANY OTHER STYLES AND SIZES,
AND FULL LINE OF
WOOD-WORKING MACHINES.

Long experience in the export trade is
a satisfactory guarantee.



1844.

NEW
PREMISES.

1896.

January, 1896, we moved into new premises, securing unsurpassed facilities for executing contracts promptly and satisfactorily.

Order direct or through your commission house, sending us copy of order.

Saw Mill Machinery Our Specialty.

There are some 300 of our saw mills running in South and Central America, Europe, Asia and Africa, of different sizes, from those cutting logs 6 feet in diameter to small mills sufficiently portable for mule-back transport.

WATEROUS, BRANTFORD,
CANADA.

The Revival in Shipping.

SINCE the beginning of August, says the *New York Journal*, there has been a very marked improvement in the demand for ocean freight transportation, and to-day the various divisions of the deep-water shipping trade are enjoying a period of prosperity such as they have not experienced for at least five years. All classes of ocean-going craft are scarce and wanted, and owners are naturally taking full advantage of their opportunity to obtain remunerative rates. Probably the most striking indication of the existing condition is that the regular transatlantic liners have their full grain accommodation engaged for all of next month's sailings, while the German lines have no room to offer until December. At Boston, where there is little local freight offering, the steamship agents have been less reserved in their offerings than their New York competitors, and have made contracts for the full grain capacity of their steamers for the balance of the year.

Agents of large grain steamers are now demanding 8s. 9d. and 4s. for cargoes from the various Atlantic ports to Cork for orders, and they seem indifferent as to the port of loading—a fact that the Produce Exchange Committee will doubtless impress upon the Interstate Commerce Commission when that body undertakes an investigation of the differential rail rates, which are more or less responsible for the inroads into New York's grain export business made by Baltimore and the Virginia ports. On the first day of August the rate at the various ports to Cork for orders was 2s. 9d. Current quotations, therefore, indicate an advance of one shilling per quarter since the improvement began. The advance in the berth grain rates on the regular steamers has, during the same period, been even more pronounced. At the beginning of August the steamship lines were only asking 2 to 2½d. per bushel to Liverpool; now they quote 4½d. for accommodation they cannot furnish until November. The London lines are requiring 4½d. for November room, while they were only quoting 3d. early in August; and the rate to Glasgow is 4¾d. against 2¾d. The German lines quote 62½ to 70 marks to Bremen for December, comparing with 45 marks, the current figure early in August. The advance in all rates has been in about the same proportion. Cotton room to Liverpool, for instance, is held at 11 64d., which is an advance of 5 64 during the period under consideration, while rates for provisions have advanced from 12s. 6d. to 20s. per ton for Liverpool, from 18s. to 25c. per cwt. to Bremen and from 75 pfennigs to 110 Pfennigs per cwt. to Hamburg.

Rates for sailing vessels do not seem to show corresponding advances with steamers, although all classes of deep water sailers are scarce. This condition is doubtless due to the inroads steamers have made during recent years upon what had been regarded as the legitimate field of the sailing vessels. At the present time, when owners of sailing vessels ask rates that are considered too high, the shipper accumulates sufficient freight, charters a steamer and has his goods moved promptly. The rate for a sailing vessel to Java is now 20 to 21c. for case petroleum. On August 1st it was 17½c.; Hong Kong is quoted 19 to 20c., against 17½ to 18c., and Japan 21c., against 18½c.

The direct cause of this general improvement in shipping is the heavy European demand this year for American products, particularly for all kinds of grain. While we on this side have been suffering from high-money rates and general business uncertainty and depression, the results of silver agitation, foreigners have been buying at low prices a very material part of our surplus grain crops; so large a part, indeed, that they find difficulty in securing ocean freight facilities to transport it. The foreign crop conditions this year were such as to compel purchases of American grain; but American merchants were so handicapped that they were not in a position to take advantage of the fact that while the European grain importing countries themselves had fair crops their outside sources of supply, other than the United States, were much below their average of usual grain output.

Trade Possibilities of Australia.

UNITED STATES CONSUL GEORGE W. BELL, of Sydney, Australia, says that "Australia is one of the best fields of commercial exploitation in the world. The people have the trade instinct highly developed, and their exports and imports amount to \$600 a year per capita, as against \$120 per capita in the United States. They buy and sell so liberally that they support 14 lines of steamers running to and from Europe and one to the United States, to say nothing of steamers plying along the coast and a great fleet of ordinary merchantmen.

As the Australians are friendly to Americans, a little attention on our part to the laws of trade and the comities of commerce ought to be the means of building up an interchange system between the two countries which would be highly profitable to both. There should be American agencies throughout Australia, with drummers to get business, and at this end should be dealers who will be scrupulous to fill the orders in the way they get them, and attentive to all the small details of the trade, including the safe packing of merchandise.

—We hear more and more about the adaptability of electrical apparatus in various wood-working operations. An electric hoist or crane, for use in elevating lumber in piling in yards, is said to work successfully.

—The wealth of the leading nations of the world is estimated to be as follows: The United States \$64,000,000,000, Great Britain \$47,000,000,000, France \$42,000,000,000, Germany \$31,000,000,000, Russia \$25,000,000,000, Italy \$14,000,000,000, Spain \$12,000,000,000, Australia \$7,000,000,000, Belgium \$5,000,000,000, Holland \$3,000,000,000, Canada \$4,000,000,000, Sweden \$3,000,000,000, Argentina \$2,500,000,000.

The Iron Horse of Progress.

THE great revival of railroad building in Mexico, following as it does the lull of business in this line in the United States, is especially fortunate for the manufacturers of railroad supplies in this country. New roads are being extended to new points and pushed further into the mountainous regions whose mineral wealth has been known for centuries to be inexhaustible, but which have hitherto been inaccessible. American capital and American energy are helping to exploit a vastly rich and undeveloped country that never realized until it came under the wise and patriotic administration of President Diaz the extent of its resources or the possibilities of advancement that are now being realized. The importation of railroad cars from the United States increased over 400 per cent. from 1894 to 1895, and comparing the first 10 months of each year, the value of the machinery, engines, locomotives and boilers imported increased from \$1,300,000 to \$1,653,000. The continued activity in Mexican railroad building argues well for even a better showing this year.—*Farm Implementation News*.

Small Gunboat for Mexico.

IN the Walnut street dockyard, New Orleans, the Mexican Government is having constructed, by way of trial, a vessel for the Mexican navy. It is the first craft which that country has had constructed in the United States, and if it fills the conditions the Zuvich firm which is constructing it will receive orders for the building of the coast guard boats which the Mexican Government needs. The cost is \$9,000, and it will be completed about the first part of November, and be delivered in Mexican waters at the expense of the constructor. It has a length of 65 feet and will mount two small cannon.

The Way United States Territory Is Settled.

DID ever the world witness such a transformation scene as that which has altered Oklahoma Territory in six years from a wilderness to a State? We all recall those graphic accounts of the assembling of thousands along its borders on the day when the United States Government had promised to throw its vast fertile reaches open to settlers, and of the mad rush for eligible locations when the hour of noon struck and the ban was removed. Up to that hour not a white settler had lived within the 40,000 square miles which form the territory. Now, according to a recent report from the British Vice Consul at Kansas City, there are many beautiful towns, furnished with all modern improvements, lighted with electricity and supplied with waterworks; mammon is represented in half a hundred banks, and religion by thrice as many churches. Over 500 miles of railway have been laid. Vast wheatfields cover the site of primeval forests. They have a university and also an asylum, but no jail, and the taxable property is assessed at close upon \$10,000,000. Such is life in a new country.

Japanese Investigating Our Telephone Systems.

MESSRS. RINJI NAKAYAMA AND YOTARO WADACHI, two very intelligent young Japanese from Tokio, are visiting the United States to investigate our telephone systems. Last week they spent in looking over the system of the New York Telephone Company, under the guidance of Mr. J. J. Carty, engineer of the company. They expressed themselves in terms of wonderment at the rapid and efficient service provided for New York City subscribers, and were astonished at the extent and scope of the long-distance service.

Messrs. Nakayama and Wadachi began their tour on the Pacific coast and have visited the telephone companies in all the principal cities, including San Francisco, Sacramento, Salt Lake City, Chicago, Cleveland and Buffalo. From here they go to the New England States, and later will visit the principal European countries on their way home.

A Household Crematory.

A CREMATORY for domestic service has recently been perfected and placed upon the market by a concern in Buffalo, N. Y., U. S. A. It is claimed that this invention solves the problem of how best to dispose of all garbage and other waste matter, the decomposition of which is not only highly offensive but deleterious to the health of the community.

This crematory is so constructed that either wood, coal, or gas or oil may be employed as fuel. It requires from ¾ to 1½ hours to consume the contents, and it does this at a cost of from 5 to 10 cents. With this crematory the garbage is completely consumed without the escape of any offensive odors. It is portable and may be placed in any basement, cellar, shed or yard, connections being made with any convenient flue or chimney. Fuller particulars of this crematory will probably be published in our advertising columns when the manufacturers are ready to accept foreign orders.

MR. HENRY MOORE, representing the Nordyke & Marmion Company, of Indianapolis, Ind., and the Trump Manufacturing Company, of Springfield, Ohio, has been travelling in Mexico for several months. He has visited the States of Nuevo Leon, San Luis Potosi, Chihuahua, Coahuila and Michoacan. At Durango Mr. Moore made arrangements to equip the large flour mills of Madero & Co. with American machinery. This one firm handles 18,000 cargoes (350 lbs. each) of wheat per annum.

TEST THE STANDARD FILES OF AMERICA.



WE WILL DELIVER

at any steamer in New York a case containing one dozen each of the following Files, on receipt of the price named:

12-inch Flat Bastard.	8-inch Mill Bastard.
10 " Square "	4 " Taper.
8 " Round "	8 " "
8 " Hand Smooth.	8 " Double Ender, Handled.
10 " 1/2 Round Bastard.	13 " Horse Rasp.

Gross Weight, packed, about 75 lbs.

NICHOLSON BRAND.....	\$12.50, or £2 12s.
AMERICAN	\$10.50, " £2 4s.

Send draft on New York or London.

NICHOLSON FILE CO., Providence, R. I., U. S. A.
LARGEST PRODUCERS OF FILES AND RASPS IN THE WORLD.

Black Diamond File Works

Twelve Medals of Award at International Expositions



Special Prize Gold Medal
Atlanta, 1895

G. & H. BARNETT CO., Philadelphia, Pa.

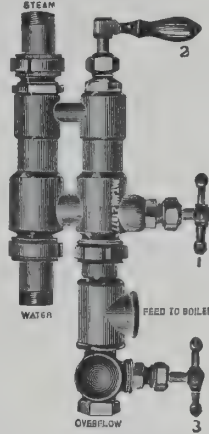
THE HANCOCK INSPIRATOR

FOR

Stationary and Marine Boilers.

HIGHEST AWARD AT WORLD'S COLUMBIAN EXPOSITION.

200,000 Now in Use.



The MOST RELIABLE and ECONOMICAL Boiler Feeder for UNIVERSAL SERVICE. Simpler in construction than any similar apparatus.

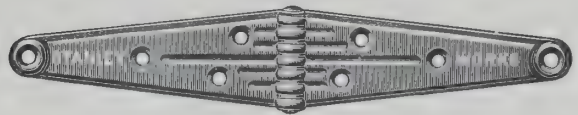
READILY REPAIRED at SMALL EXPENSE. NO ADJUSTMENT of either steam or water supply required for varying steam pressures. Delivers WATER at either HIGH or LOW TEMPERATURE, as desired.

All sizes LIFT WATER 25 FEET.

Descriptive Circulars and Price List upon application.

THE HANCOCK INSPIRATOR CO., - Boston, Mass., U. S. A.
EUROPEAN OFFICE: Patentees and Manufacturers.
Old Swan Wharf, London Bridge, London, England.

Wrought Corrugated Steel Strap and T Hinges.



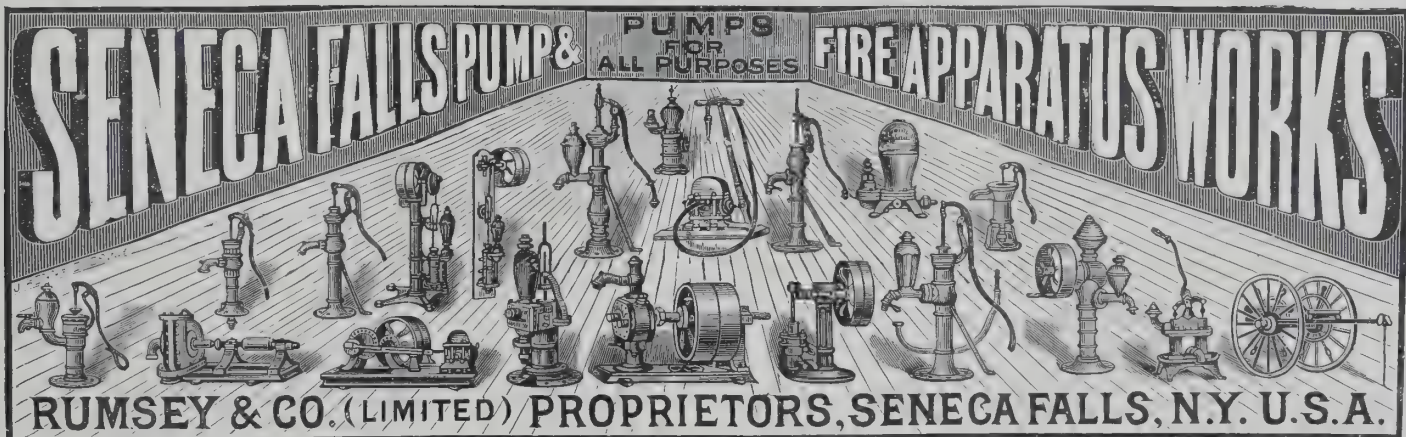
They cost no more than the old style and are much stronger.

They are also somewhat lighter, thus making freight and duties less.

SEND FOR PRICE LIST.

THE STANLEY WORKS, NEW BRITAIN, CONN., U. S. A.
79 Chambers St., NEW YORK.

PUMPS FOR ALL PURPOSES.



RUMSEY & CO. (LIMITED) PROPRIETORS, SENECA FALLS, N.Y. U.S.A.

EXPORT OFFICE: 35 DEY STREET, NEW YORK CITY.

Send for catalogue and prices.

C. L. HAUTHAWAY & SONS' SPECIALTIES.



PATENT LEATHER POLISH

For polishing patent leather shoes quickly and without injury to the leather.

PRICE, - \$9.00 PER GROSS.

THE
DEAL



THE
IDEAL

Is the only Dressing in the world that does not contain Ammonia, and it positively contains oil.

PRICE, - \$24.00 PER GROSS.

REG-
ULAR
4 OZ.
Bottle.



Best Dressing put up at this price, and warranted in all respects.

PRICE,
\$7.50
PER
GROSS.



The Boss Dressing

Is the GREATEST CLEANER known for Russet or Colored shoes. Will remove all stains and dirt and make the shoes as good as new.

PRICE, - \$12.00 PER GROSS.



RUSSET LEATHER POLISH

For polishing Russet and all fancy colored shoes.

Produces a lasting lustre.

PRICE, - \$9.00 PER GROSS.

Machinery Notes.

—There are 30 firms in the United States who want to build torpedo boats for the Government.

—An American company has made a contract for lighting the city of Lima, Peru, by electricity.

—A nail-making machine produces as many nails in a given time as was formerly made by 1,000 men.

—A British ship has been chartered at private terms to carry 2,518 tons of iron pipe from Pensacola to Japan.

—Between \$2,000,000 and \$3,000,000 worth of sewing machines are exported by the American manufacturers every year.

—The Mercedes River, California, is to be dammed to get 6,000 horse-power of electricity to work a number of mines in that region.

—The Exeter Machine Works, Exeter, N. H., U. S. A., recently sent one of their house heating boilers to a customer in England.

—July figures show shipments abroad of machinery nearly \$1,000,000 in excess of 1895, while the increase for the half year is over 50 per cent.

—Señor Juan Ohner, proprietor of the Leon Brewery, was in New York City last month purchasing machinery. He has recently enlarged his plant.

—American chairs and roll top desks sell so well in London that a new company composed of people making these goods has been formed to push the business.

—The railroads of Mexico are, with one exception, of American make, and the engineers, train and station officials are nearly all Americans. The roads are well managed.

—Packages made from the products of the veneer machine have grown rapidly in popularity of late years, and very likely will continue to gradually replace old-time packages that cost more.

—The Chattanooga Foundry and Pipe Works have just finished filling a contract with the Mexican Central Railroad, calling for 33 cars of iron pipe. The cars were shipped direct to the City of Mexico.

—Members of the German royal family ride American-made wheels, much to the annoyance of German manufacturers. The German wheels are much heavier than those built in America.—*New York World*.

—The Pope Manufacturing Company has shipped to Cardinal Satolli a Columbia bicycle, model No. 40, 1896. The gift was offered and accepted before it was sent. His Eminence does not yet know how to ride.

—An automatic electrical semaphore has been perfected for trolley road crossings. It is so arranged that a car approaching from either direction will cause danger signals to be displayed at the point of intersection of the two roads.

—Chili is showing a desire to be on good terms with the United States again. We thought this state of affairs would come about. The Itata case was unfortunate; but, then, it is necessary for one to do sometimes what he dislikes to do.

—The British steamer *Strathgairn* left Philadelphia August 27 for Nagasaki, Japan, with the largest cargo of case oil ever sent out of that port, 161,000 cases. Japan has received a vast quantity of petroleum from the United States in the past few months.

—A Kansas City firm last month received an order for 100,000 orange boxes to go to Tampico, Guadalajara and Yautepec. The boxes are shipped to Pensacola Fla., by way of the Memphis Railway, and from that place to their destination by steamer.

—The Japanese Parliament has voted a sum of 12,000,000 francs for the purchase, repair and improvement of tools, between the years 1896 and 1903, in a series of successive credits. The chief part of this sum will be devoted to the purchase of machine tools from abroad.

—The Hamilton (O.) Machine Tool Company has just completed another large order for drill presses, which will soon be shipped to Stockholm, Sweden. The same company is preparing for shipment a large consignment of planers and boring machines, to be shipped to Italy and Austria. These machines will weigh over 50 tons each.

—The Acetylene Light, Heat and Power Company, of Niagara Falls, N. Y., has just received an order for 20 tons of carbide, "C. O. D. on dock," from Archard & Co., Marseilles, France. This is the first of foreign orders received and is an indication that there will be a big foreign demand for the carbide until, at least, foreign plants have been established.

—It is stated on good authority that the mining machinery of Canadian manufacture alone that has been purchased and set up in the Kootenay district, British Columbia, amounts to \$500,000. The quantity of such machinery imported from the United States into that gold country far exceeds this in value, however, being estimated at several times that sum.

—Paper telegraph poles are the latest development of the art of making paper useful. These poles are made of paper pulp, in which borax, tallow, etc., are mixed in small quantities. The paper poles are said to be lighter and stronger than those of wood and to be unaffected by sun, rain, dampness or any of the other causes which shorten the life of a wooden pole.

—The sale of Alabama pig iron in Europe promises to develop a new and important branch of business for the Birmingham, Ala., producing region. The Tennessee Coal, Iron and Railroad Company has just shipped 500 tons to Liverpool, and 300 to Genoa, Italy, and has orders for more, with inquiries to this and other companies here, which indicate a growing demand for the Alabama product beyond the sea. "Tests by European experts on sample shipments made some months ago proved satisfactory."

—When an American plant for a locomotive factory is shipped to Russia it means a good deal. Russia is outgrowing any other European country, and the new Czar is pushing its growth. The young man may turn out to be the greatest of the Czars, and under him it is easily possible that Russia may build twice as many miles of railroad as it ever built in its whole history before him.

—Stephen Randall, of Morton, N. Y., is shipping his crop of about 2,000 barrels of apples, including Baldwins, Greenings and Kings, to England. The estimated time of passage is 18 days. The entire cost per barrel for all freights and commissions is \$1. Henry Billings, of same town, has also sent a consignment, and many others are anxiously watching for the success of the venture.

—Two crushers with a daily capacity of 200 tons each have just been shipped by the Gates Iron Works, Chicago, to the Coolgardie gold fields of West Australia. The firm has also taken an order for one of its largest crushers, capacity two tons per minute, for shipment to the Basalt Actien-Gesellschaft, of Koln, Germany. The machine will be used for making ballast from basalt rock.

—A Sheffield manufacturer calls attention to the severe American competition in the English markets. He says: "My agent writes me that a large order, for which we quoted an outside discount, has gone to America at 67½ per cent and 5 per cent, and this, with freight and charges, represents approximately 70 per cent. off Sheffield list, which will mean a heavy loss if supplied by Sheffield manufacturers."

—The Japanese Government has protested against the delay in the transmission of mails between Japan and England by the Canadian route, the time being from two to three days longer than when they are sent to New York and San Francisco. The delay is due to the slow Atlantic steamship service running to Canadian ports as compared with the fast Atlantic liners running between New York and British ports.

—In Louisiana the Westlake, Lockport and two of the Lake Charles lumber mills have entered into an agreement to furnish 2,000,000 feet of Calcasien pine for shipment to South Africa in the near future. It is in the nature of an experiment and if it proves successful the mills have options for almost unlimited shipment. The lumber will go from Westlake to Sabine, Pass, Tex., on a barge, where it will be transferred to ships.

—The Hamburg *Correspondent*, a semi-official organ, demands that energetic steps be at once taken "to protect German interests in Samoa against the encroachment of American adventurers." The paper asserts that Americans are actively seizing the trade in Samoa, ignoring the international arrangements entirely. The *Freisinnige Zeitung*, replying to this article, says that Samoa is not worth quarreling over with the United States and England.

—The Government returns of exports of domestic manufactures from the United States for August show a continuance of the steady expansion which has marked this branch of trade in recent years. They were in value \$21,147,206, or more than \$2,000,000 in excess of those of August 1895. For the eight months ending August 31st, the growth has been from \$129,441,726 in 1895 to \$163,112,670 in the present year. This is larger than for any previous year in the commercial history of the country.

Our South American Trade Grows.

DOWNTOWN merchants engaged in South American trade are astonished at the statements made in various newspapers of this city by G. W. Fishback, who recently returned from a trip with the members of the Commission who went to gain information upon extending our business in the Southern republics.

"The truth is," said one of the leading exporters, "that our trade this year with Argentina alone will amount to over \$6,000,000 in value, and that while in 1894 and 1895 three steamers a month sufficed to carry our exports, we are now sending five and six steamers."

"We are increasing our trade yearly with Argentina, Uruguay and Brazil, and compete with English and German houses in supplying many lines they have had the exclusive trade in heretofore."—*New York World*, Oct. 10.

THIS week a trio of business men from Japan, A. Asano, K. Kondo and T. Takeo, arrived in this city, having made a tour of the Ohio and Indiana oil fields. They visited the Pittsburg Refining Company's plant at Coraopolis and later made a tour of the McDonald oil field. The object of these gentlemen in coming to Pittsburg, the geographical centre of the oil industry, is to take careful observations of deep drilling methods and to purchase improved machinery to carry on the developments in their country. American machinery, Mr. Asano stated, is used almost exclusively in the oil fields of Japan. The oil there is found much nearer the surface than in America.

It is reported that the San Francisco merchants and jobbers are beginning to realize that they are losing a portion of their Japanese trade and in order to regain it commercial associations in the city are making arrangements to send a commercial commissioner to the Orient to study the needs of the trade there and keep a line of samples from California manufacturers on hand for inspection by Japanese buyers.

—A Kansas City packing house is reported to have received an order direct from the Japanese Government for 18 carloads of corned beef. The order is one of the biggest ever received there and will be ready for shipment within ten days. This immense shipment of beef is believed to be for use in the Japanese navy.

Bellis
CYCLES

MADE UPON HONOR.
SOLD UPON MERIT.

The Most Popular 1896 Wheel

IN THE UNITED STATES.

Bellis
CYCLES

Our Export Figures are interesting and will be quoted on application.

BELLIS CYCLE CO., - INDIANAPOLIS, IND., U. S. A.



Johnston's Standard Kalsomine and Fresco Paints,

Ready for Use!

FOR WALLS AND CEILINGS.

Absolutely Reliable!

GOLD MEDAL, NEW ORLEANS, 1884-5.

EIGHT FIRST-CLASS AWARDS.

Cheaper than Wall Paper or Oil Paint.

Pure White and Beautiful Tints. Will not rub or scale from the wall. Invaluable in cleansing and disinfecting walls impregnated with germs of disease. Mixed in five minutes ready for the brush, by the addition of water only. Five pounds will cover with a good body 500 square feet on hard-finished walls. Send for sample card and prices to

DRY KALSOMINE AND FRESCO PAINT WORKS, 82 & 84 Washington Ave., Brooklyn, N. Y., U. S. A.

Orders filled through commission houses. Correspondence solicited. Catalogue "J" on application.

Twist Drills made by this Company are HOT FORGED by an Entirely New Process.

Bit Stock Drills,
Taper Shank Drills,
1/4 inch " "
3/8 inch " "
Drills, fitting ratchets
Etc.



U.
S.
A.

Catalogues sent free
on
Application.

They are TOUGHER and STRONGER than the OLD STYLE Milled Drills.



COULD'S STEAM AND WATER PACKING.

Patented June 1, 1890.—The Original Ring Packing.

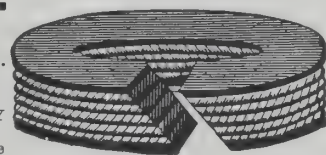
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM.
SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE COULD PACKING COMPANY, EAST CAMBRIDGE, MASS.

ORIGINAL RING PACKING.

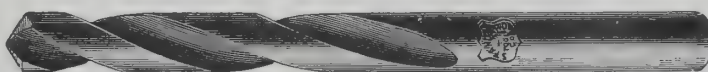


ALBION CHIPMAN, Treas.

The STANDARD TOOL COMPANY, Cleveland, Ohio, U. S. A.

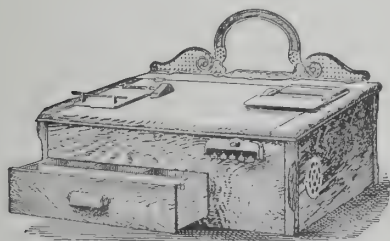
MANUFACTURERS OF

Increase Twist Drills.



CATALOGUES SENT FREE ON APPLICATION.

Bit Stock Drills for Metal or Wood, Taper and Straight Shank Drills, Reamers, Sockets, Chucks and extra length drills for Electrical work.



HARD TIMES! DID YOU SAY?

That is the best possible reason why you should adopt a cash system that enables you to account for every penny that passes over your counter. Write us for descriptive circular on "THE SECURITY."

FACTORY:
INDIAN ORCHARD, MASS.

HOUGH CASH RECORDER CO., Springfield, Mass., U. S. A.

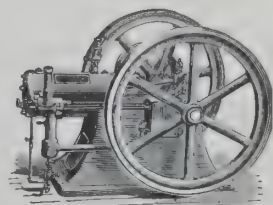
WEBER GASOLINE ENGINE

for use in any place or for any purpose requiring power.

Only a few minutes' attention required each day. Guaranteed cost of operation is one-tenth of a gallon of 74° Gasoline, or 17

cubic feet gas per horse power per hour. The simplest, most economical and best power. No engineer required; no coal; no fire; no danger. Sizes, 2 to 50 horse power. (Special attention paid to secure packing in heavy cases for export). Goods delivered New York, San Francisco or New Orleans. Cable Address, "Webergas," Kansas City. State size wanted.

WEBER GAS & GASOLINE ENGINE CO., 425 S. W. Blvd., Kansas City, Mo., U. S. A.



Bernard's Patent Paragon Plier, Manufactured by The Wm. Schollhorn Co.,

NEW HAVEN, CONN., U. S. A.



THE BOSS TOOL FOR BUILDING WIRE FENCES.

This is a practical and durable combination of a Plier, Wire Cutter and Hammer, in a most convenient form, and is a labor-saving tool, for in using these pliers you always have a hammer in hand ready for use. The Cutters have a compound leverage that enables them to cut wire easily. The Hammer has a serrated face that prevents slipping in driving staples, and the whole Plier is made of hardened steel throughout, and is put together with Bolts and Nuts, so that if the cutters should ever get broken, or from excessive use should become too much worn, they can be readily and cheaply replaced. This plier has been endorsed as the best tool for the purpose ever placed upon the market.

Manufacturers of the Celebrated "Star Brand" Shears and Scissors, and "Elm City" Shears in large variety.

BEST QUALITY ONLY.

Also Bernard's Parallel Pliers in all styles and sizes for various purposes.

Markets for American Furniture.

(From our Special London Correspondent.)

LONDON, October 10, 1896.

IT is some years now since I first called attention in these columns to the growth of the foreign trade in American-made furniture, and subsequent events have shown the accuracy of my remarks. For example, I find on turning to the official statistics published by the Department of State at Washington that the following are the facts: Total exports of American furniture in 1890, \$540,888; 1895, \$3,152,199. Nothing more need be said to prove that this is a rapidly expanding business. A good deal of this expansion has taken place in England where American desks, chairs, tables, etc., are coming very much into fashion; indeed, they have already come and intend to stay with us. We have evidence of this in the numerous showrooms which American makers have set up in this city and in the principal industrial centres over England. I have been talking lately with the chief of a large importing house and he tells me that the trade is doubling itself. This confirms my own observations, because in several streets there are bills placed in conspicuous positions inviting people to inspect the latest styles and designs in American roll desks. These desks are becoming quite the fashion here because they are so very convenient. I can myself bear impartial testimony to this, having used an American roll desk for a long while.

Believing as I do that this export trade in American furniture is only in its infancy, I called on one of the best houses doing business in this line and subjected the principal to the torture of a searching interview, from the effects of which I believe he is slowly recovering.

"Now, I should like to know," I said, "how it is that American manufacturers are getting such a hold right here in London where we have thousands of furniture makers and an unlimited supply of operatives willing to work at a very cheap rate."

My friend, although writhing in the examination chair, could not forbear a little smile at my anxiety to get down to rock-bottom facts.

"Well, now," he said, "just wait a minute and I will tell you. First of all, we haven't got the material. That's a big point, is it not? Of course, you know that all our cabinetmakers and furniture manufacturers in England buy their best wood from the United States; in fact, last year we purchased \$2,392,000 worth of unmanufactured wood, as distinct from huge quantities imported for building purposes and manufactured articles, such as doors, etc.. We have to pay the freight, several commissions, and all the numerous expenses incidental to ocean transport. Well, you see that even before you start manufacturing you are rather handicapped, because in the States they have this supply of material right under their nose, as it were, and have no such charges."

"Ah, but," I interrupted, "what about their dearer labor? We have them on the hip there."

A smile of compassion flitted over my victim's face before he told me that any such idea was quite erroneous. "In England," he added, "we make so much by hand; in America they do quite the opposite. It almost comes to this, that a piece of wood is put into one end of a machine and a beautiful chair or other article is turned out at the other. A dozen men or more will do a bit to a desk, whereas one man in England will often make it throughout. It necessarily follows that he cannot do the work so well, especially as he works so much by hand. In the States, now, the idea is to make each man an expert in his own particular part of the work. It is better to do a small portion well than to be a general muddler. Their extensive use of machinery insures accuracy of work and beautiful finish for which American furniture is so noted. It is not possible that a man working with a saw and plane should turn out such good results as if the material had all been cut and planed to a fraction of an inch by means of skillful machinery. It is quite different in the case of carved furniture, where, of course, a great deal of handwork is absolutely necessary. I may tell you that the big factories turn out such quantities of work that it would make our old-fashioned artisans gasp to hear it. What do you think of 7,000 chairs every day for one factory? Oh, yes, that is not such an extraordinary feat, but naturally such results have not been obtained all at once. Fortunes have been spent in perfecting their plants. They can beat the world, because, first of all, they have the timber, as I told you just now; secondly, they have the skilled labor, the capital, plant and patented machinery, and know just what they are doing. And last of all, their system of manufacturing lends itself to cheapness of production, because our factories turn out infinitely more finished work per day at less cost per article than ours do here in England. Still, they pay their people more, but they earn it.

"American furniture is liked because of its beautiful design and finish, for its superb construction, and also, because it can be obtained at a moderate price. I may also tell you, *en passant*, that other articles of wood, for domestic vehicles, agricultural, building uses, etc., are fast creeping in to the disadvantage of our manufacturers. The Americans succeed mainly because of their superior machinery. The moral is, that if we or any other foreign nation want to succeed likewise, we must adopt the same common-sense methods and adopt American machinery."

After this vigorous onslaught I thought I had about enough to tell you on this matter; but my informant, evidently being wound up for the occasion, proceeded to tell me of American plans for capturing the German trade in furniture. It seems that your Teuton friends are very backward indeed in these matters. Their chairs are about the most uncomfortable things imaginable; rockers are blessings unknown, while their tables sway about on uneven legs. All their furniture is very plain and a great field is opening there for the American exporter.

This journal circulates in Germany, so I hope my German readers will act

upon Captain Cuttle's advice and make a note of what I say. American furniture is no dearer than the German manufactures, and is infinitely preferable for comfort, appearance and durability. The import dues need prove no barrier.

Undoubtedly, if these foreign markets were well worked they would afford sufficient orders to American factories to keep them all in full working capacity all the year round—aye, and to support many new concerns.

Also be it noted that if foreign makers want to start manufactures on their own account they must get the most up-to-date machinery for the purpose, or else they simply won't be in it with the smart American, and where can they be better supplied than by going to the fountain head?

Our Trade with China and Japan.

WE know that the Japanese regard this country with great favor. They would rather trade with us than with any other people. We have also reason to believe that China is more kindly disposed towards us than towards any one of the nations of Europe. Li Hung Chang virtually said as much when in New York. Why is it then that we have so small a share of the trade of those countries?

We buy vastly more from each of them than we sell to either, while England sells to each of them several times as much as she buys from either. Is this condition of affairs due to the fact that English merchants make a study of the trade of China and Japan, and spare no efforts to meet its demands, or is it because she sells more cheaply?

We doubt if the latter reason is the true one. The secret is probably that she makes a special effort to get their trade. The goods sent to them are packed in such a way as to win their favor, and no doubt the terms of payment are made satisfactory to them.

What English merchants can do American merchants ought to be able to do. As far as we can see there is no reason why England should monopolize the trade of China and Japan. She has the monopoly of it simply because her merchants set about getting control of it just as soon as the opportunity to do so presents itself. Our merchants having a good home market at the time did not exert themselves to get it.

Having obtained control of it, England has succeeded, in one way and another, in retaining it. It is not to be wondered at therefore, that the English have been so successful in retaining control of the Chinese and Japanese markets for foreign goods. The United States will not succeed in getting a much greater share of those markets than they now have unless our merchants adopt tactics similar to those of the British merchants.—*The News*.

American Goods in Venezuela.

ON the authority of Theodore C. Search, president of the National Association of American Manufacturers, the following facts with regard to the opportunities presented to American manufacturers by the Venezuelan trade will be of interest: American prices of hardware will compare favorably with the English. The German prices are low, but there is no comparison between the German and American goods. There is undoubtedly a splendid opportunity for the introduction of American furniture. In wearing apparel, such as shoes, hats and clothing, there is no market except for the very best qualities. There is a very satisfactory market for the sale of manufactured leather, uppers and shoe findings.

In brief, it is the opinion of the merchants of Venezuela that the following articles might be imported from the United States with profit: American building material, hardware, common glassware, cutlery, fencing wire, mining and sugar machinery, agricultural implements, carriages, cars, steam engines, lumber, cotton goods, certain kinds of wearing apparel and all kinds of articles for home furnishing and decoration, carpets, curtains, rugs and novelties. Here seems to be an excellent opportunity for our manufacturers and merchants.

NOTICE has been given that the Argentine Republic has made an important concession, giving manufacturers in the United States the privilege of importing their products into that country under bond, free of duty, until sold. All goods must be sent in through the regular ports and may be taken to any city of the Republic. If sold the duty is to be paid, and if they are not disposed of the goods can be reshipped to the United States without paying any duty. Such a concession had been previously made by the Venezuelan Republic. The Argentine law passed that Congress on June 3, and official notification of the action was made to the Argentine Minister at Washington on August 20.

SURPRISES are in store for the nations. Vaster achievements than have ever been realized are looming up. Chief among these are ship canals. The nations want to get closer. Sand bars and shallow lakes, inlets and low lands separate them. The Manchester Ship Canals collected in tolls in the first six months of this year a little over \$400,000. Three or four canal-building schemes are now coming up. A dozen are attracting the deep attention of the capitalists of Europe. Cheapness of haulage and speed of action are the objective points. If the armies were put to dig these canals it would be better than practicing how to kill people.

—The manufacturers of the United States have been invited to compete in an exhibition of machinery at Munich, Bavaria, in 1898. Every invitation of this kind should be accepted gladly. No other country in the world has so much to gain and so little to lose by such competitive exhibitions. American manufacturers of machinery are easily ahead.



DR. J. C. AYER & CO.'S STANDARD FAMILY MEDICINES.

Approved by the Profession.

Full directions, in various languages, accompany each bottle of our medicines.

Ayer's Cherry Pectoral,

For the rapid cure of Diseases of the Throat and Lungs.

Ayer's Sarsaparilla,

For purifying the Blood and the cure of Scrofulous Diseases.

Ayer's Ague Cure,

Warranted to cure all Malarial Disorders.

Ayer's Hair Vigor,

For Restoring gray hair to its Original Vitality and Color.

Ayer's Cathartic Pills,

The most valuable Home Remedy for all Purgative Purposes.

Prepared by Dr. J. C. AYER & Co., Lowell, Mass., U. S. A. Dealers liberally supplied with almanacs, show cards, and other advertising material.

THE WORLD-
RENOWNED

"Perfection Water Elevator AND Purifying Pump."

A Sure Preventive against Malaria, Typhoid
and Other Fevers.

THE EXACT PUMP FOR YOU.

The Celebrated "Perfection Water Elevator and Purifying Pump" is the only bucket pump on earth where the chain or buckets are made of strictly one piece of black open hearth steel, folded together by double lap seams, and the entire product galvanized after it is constructed. Guaranteed for ten years.

The storage of waters in cisterns and open wells is the method largely adopted throughout the world for drinking, cooking and bathing purposes.

THIS PUMP IS GUARANTEED TO PURIFY THE
FOULEST WELL OR CISTERN IN TEN DAYS'
ORDINARY USAGE.

How does it purify?

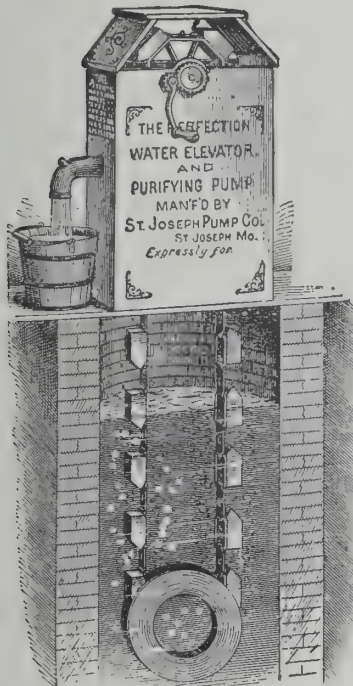
Each bucket descends full of air and ascends full of water. For each gallon of water drawn a gallon of air or oxygen (the vital element) is circulated through the water from the bottom to the top. This not only thoroughly agitates, ventilates and purifies the water, but also forces a large supply of oxygen which is sufficient to consume all impurities or organic matter in the foulest water. It is an admitted fact by thousands using them, that this Purifier is the only Pump that will destroy wigglers, water bugs and water lice, and make foul or stagnated cistern water pure and sweet, removing all color, bad taste and smell. After a few days' usage or the "Perfection," the old flatness and insipidity in water are replaced by a sparkle like that of a mountain stream. In fact, it will make bad water good, and good water better.

All foreign shipments delivered for export f. o. b. cars N. Y. Write us for catalogue and book of information on impure water.

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Water for the Home, Farm AND Ranch!

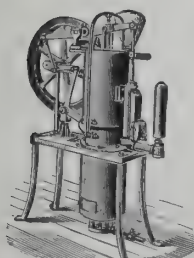
WATER YOUR STOCK,
WATER YOUR LAND
AND WATER EVERYTHING
DEPENDENT UPON WATER

WITH THE

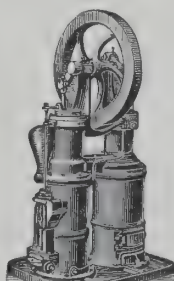
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HOT-AIR PUMPING ENGINE

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CATALOGUE.

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THE HARRINGTON & KING PERFORATING CO. CHICAGO.



METALS PERFORATED AS REQUIRED FOR

SCREENS OF ALL KINDS

FOR USE IN

Milling and Mining Machinery,
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Woolen, Cotton, Paper and Pulp Mills,
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Mills,

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Stone, Coal and Ore Screens,
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Brick and Tile Works, Filters,
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Works,

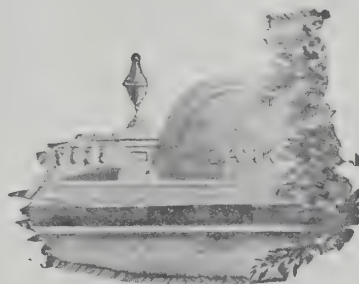
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Pediments, Cornices, Window and Door Heads, Bay Windows, etc., of sheet metal (galvanized, iron or copper) are handsome, light and inexpensive. We have furnished the export trade satisfactorily for years. Write us for information and estimate.

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LEADS THEM ALL,

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For yachts. Brightest color made.

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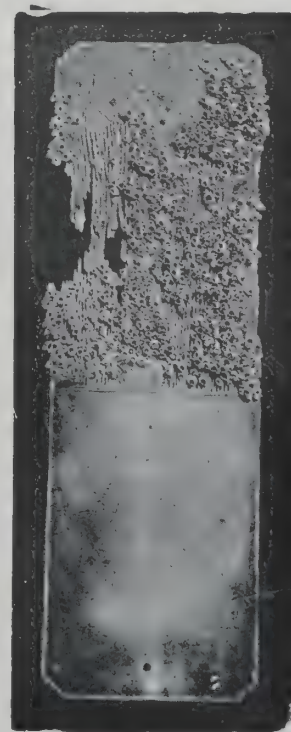
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U. S. A.

REMARKABLE FACT.

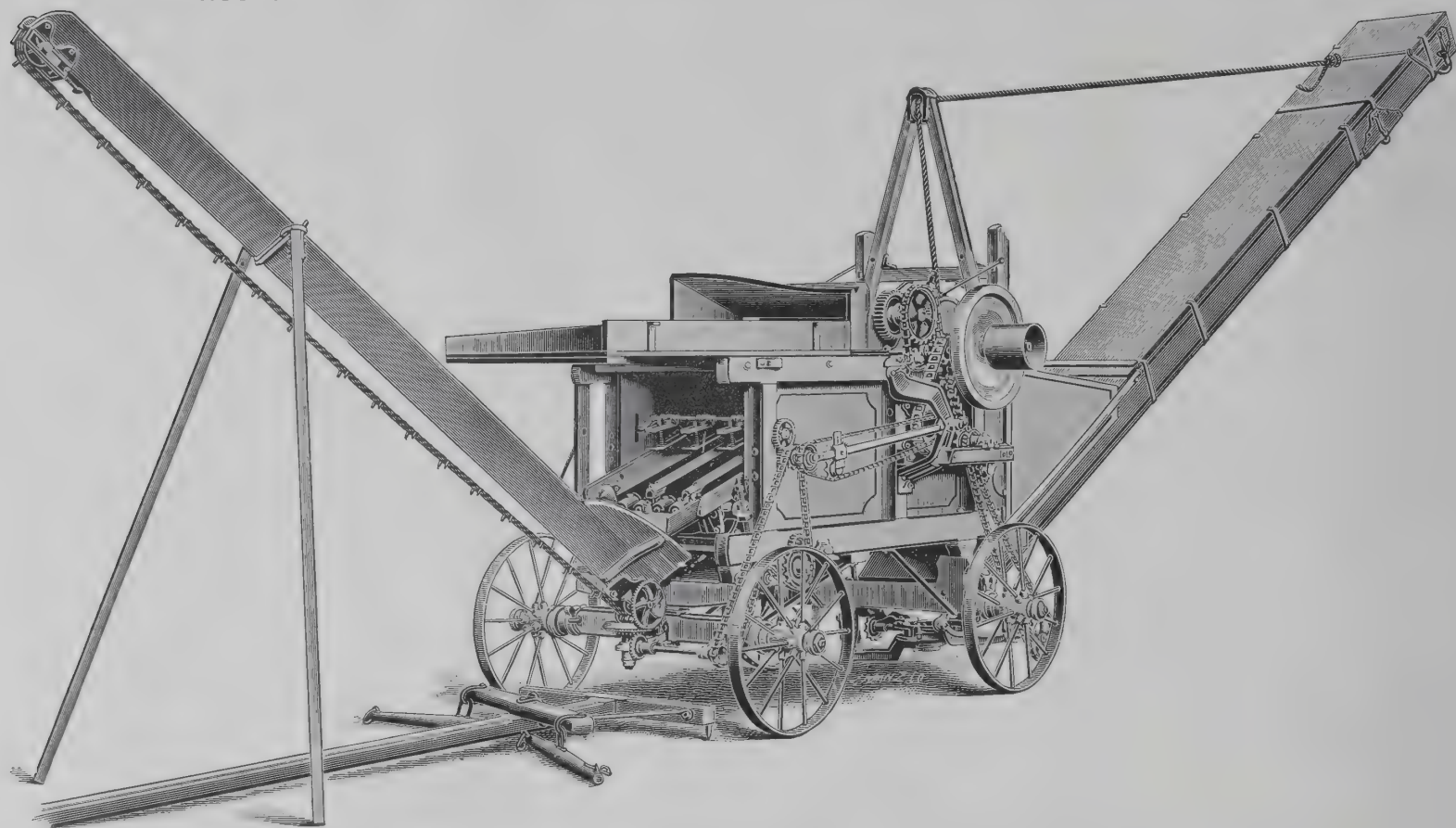
This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—it is in splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD,
Master Schooner "Florence Shya."



"Keystone" Corn Husker and Fodder Shredder

HUSKS THE EARS AND SHREDS THE STALKS INTO THE BEST FODDER KNOWN.



Used in the United States, Mexico, Central America, Chile, Uruguay, Argentine. It is strong and durable, and does excellent work. Shredded fodder is best. Send for full description and Export Price List.

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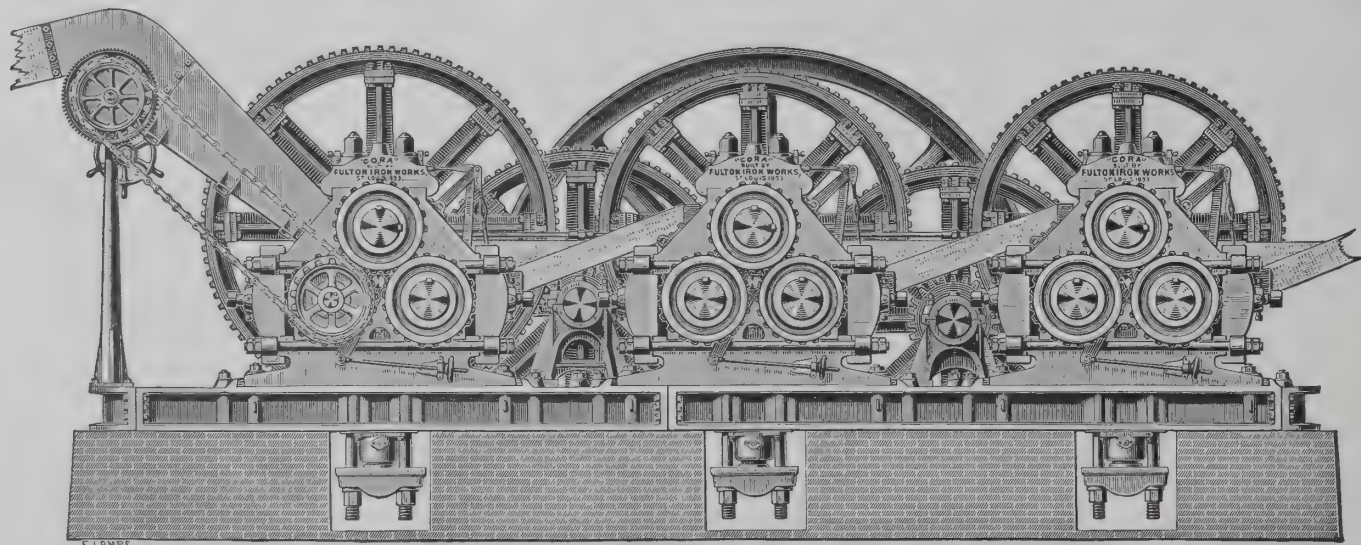
KEYSTONE MANUFACTURING CO.,
STERLING, ILLINOIS, U. S. A.

Address Export Office,

KEYSTONE MANUFACTURING CO.,
B 19-21 Produce Exchange, New York, U. S. A.

"CORA" Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by **"FULTON IRON WORKS,"** St. Louis, Mo., U. S. A.

Per S.S. "COPTIC"

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

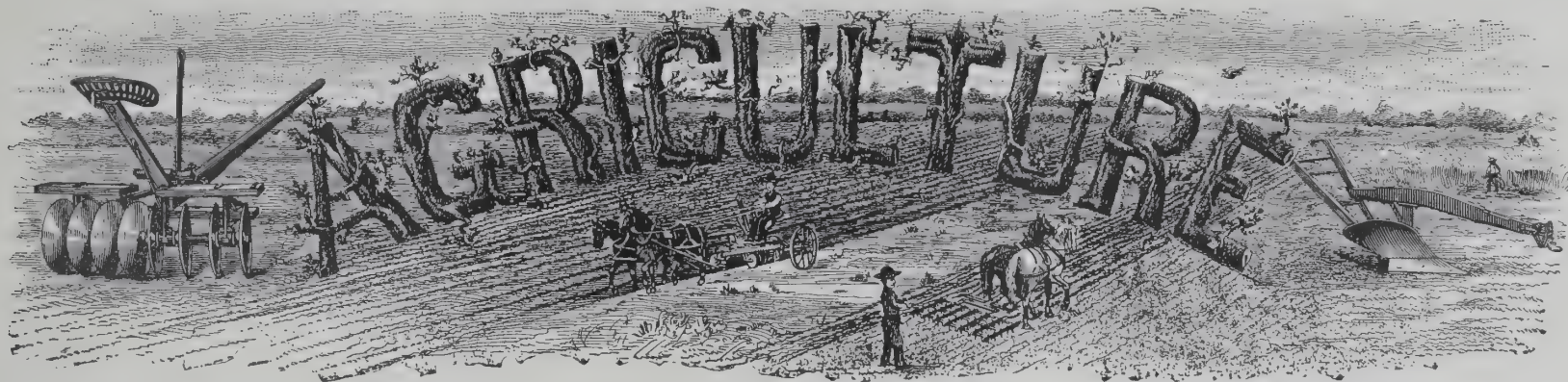
Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104 $\frac{3}{4}$; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

American Butter Exports.

THE Elgin, Ill., *Dairy Report*, states that there has been in the last few months a very great impetus in the export trade with Great Britain in butter, and also a very considerable increase in the export of cheese to that country. Heretofore along that line the exportations have consisted largely of the medium and low-grade stock.

With the low prices that have prevailed during the present season there has been a very considerable, in fact phenomenal, increase in the better grades, and the result has been satisfactory both to the shippers and the receivers on the other side. The adoption of a package suitable for the English trade has been urged by a great many people for convenience in handling, and because the English people are conversant with this style of package, and it would seem better to adopt that package than the ordinary 60-pound tub.

The requirements for the higher class of trade in Great Britain are a solid, firm, lightly colored, lightly salted product—one that the retailer can place on his slab and cut into squares of a quarter to five pounds and leave a clean, square surface, smooth and perfect in appearance. This can be done in no better way than in having the packages made square originally, so as to give his customers the advantages described above.

The tests made as to the quality of milk in Denmark and in this country prove conclusively that the fat percentage runs very much higher in this country than in that. It may be that it is the class of cows, kind of food or some other reason; but the fact remains the same, that the average tests of the cattle in this country for butter fat are larger than they are in Denmark or Great Britain. This gives us, of course, another advantage that will help us to compete. With conservative prices prevailing for the next six months, the enormous production of the present season, both held and fresh make, can, very much of it, be marketed in Great Britain, and this is the question that will most interest our manufacturers. We are handicapped by two things that are partially overcome by our better methods and newer ideas in regard to the production and manufacture of the product. The two drawbacks are the high cost of land and labor compared with the same elements of both Denmark and Australia. Notwithstanding these disadvantages, we believe that if our manufacturers will follow the English idea of furnishing goods in the shape required by their customers, whether it be in home or foreign countries, we shall be able to maintain a market for a large amount of our better grades of creamery butter; but it must be borne in mind that we cannot educate our customers up to our ideas—we must meet their requirements.

Exports of Grain from Southern Ports.

ACCORDING to the *Manufacturers' Record* the total exports of corn from the United States for the year were 94,000,000 bushels, of which 65,800,000 were from Southern ports. New Orleans shows the enormous increase of 21,148,100 bushels as compared with less than 3,000,000 bushels for the preceding year. Norfolk and Newport News together shipped 18,300,000 bushels this year, as against 7,600,000 last year. Galveston, which shipped no corn last year, shipped over 5,000,000 bushels this year. Baltimore shipped 5,500,000 bushels last year and 19,000,000 this year. The increase at Mobile was from 93,000 bushels to 1,600,000—the largest relative increase reported.

The shipments of wheat from Southern ports for the year was 6,408,979 bushels, but reducing the flour shipped to its equivalent in grain the total shipments of "grain" of all kinds from Southern ports for the year was 95,000,000 bushels, as against 45,000,000 the year before.

It is a trade worth competing for, and it is unpleasant to have to note that its currents have divided to reach the coast at ports on both sides of Charleston—two of them being as near as Savannah and Port Royal.

Cotton for Japan.

MR. TSURUTANI, of Kobe, Japan, is now in Texas arranging on the part of Japanese manufacturers of cotton textiles for the purchase and direct shipment of Texas cotton to Japan. He says there are 80 plants in Japan for the manufacture of cotton goods, and other mills are about to be established.

His nation intends to supply cotton goods largely in the East, and will send buyers annually to the Cotton States, as is the practice with the European spinners. Mr. Tsurutani says Texas cotton will shortly be shipped from San Francisco to Tokio on a Japanese steamship, which will be a new movement in the cotton trade.

English Beer—American Hops.

VAST quantities of English ale, old and pale, and of English "bitter beer," are imported into the United States for domestic consumption, the average importation of such foreign malt liquors amounting in a year to 700 000 gallons in bottles or jugs. The superior, or supposed superior, merits of English ale and beer sustain the demand for it in the United States, but it is a fact not generally known that a very large share of the English ale and beer drunk in this country is made from American hops. An English trade journal has called attention to the fact that the exports from the United States to Great Britain of hops for use in the British breweries amounted to 17,500,000 pounds last year. The exportation of American hops has been increasing at a very lively rate, and has, in fact, doubled in volume during the past three years, the larger volume coming from the Pacific States. The hop acreage of the United States is 50,000, and the total product of American hop vines 40,000,000 pounds in a year, of which, as the Treasury figures show, 17,500,000 pounds were exported last year to make "genuine English beer." New York is the great hop-growing State, with an annual product of 20,000,000 pounds, one-half the country's total, and nearly all of it is used by Eastern breweries. Of the 19,000,000 pounds of hops raised in the three Pacific States of Washington, Oregon and California, most is exported to England. The product of hops in New England is insignificant, except in the State of Vermont. There are no hops grown in the South, and very few in the West, except in the State of Wisconsin, where hop raising is profitable because of the demands of the Milwaukee breweries. American hops for English beer, California claret sent to France to be returned as genuine French claret—that's the rule now.

American Cottons in Africa.

UNITED STATES CONSUL BERGHOLZ, of Erzerum, Armenia, has made a report to the State Department calling attention to the increase of the imports of American goods into East Africa. He says:

"Of all the imports to Zanzibar, that of piece goods is by far the most important. Last year it was twice as much as that of any other article, and while the imports of piece goods from the other exporting countries increased last year that from Great Britain declined one-fourth. The so-called 'gray cloth,' a kind of unbleached cloth which is in great demand in the interior of Africa and in some other parts forms the only currency, is the most important class of piece goods imported, and America has the best part of the trade, not only because it was the first in the field with it, but because it is of better quality than Manchester production of the same price, is free from sizing, and does not shrink when washed. The American cloth is also stouter and can be relied on for uniform weight, while consignments from other countries vary in both weight and width. In some parts, especially on the Benadir coast, the American cloth, though costing more than the British, practically monopolizes the market."

Freight on Corn for Export Reduced.

FREIGHT charges on corn from Chicago to the Eastern seaboard have been reduced 5 cents a 100 pounds. This reduction is due to competition offered by New Orleans on the south and the Lakes on the north in bidding for this export trade movement. A great deal of grain of the Mississippi and Ohio valleys has sought an outlet through New Orleans or over the Great Lakes. This caused a desire on the part of the railroads affected to try the efficiency of a lower rate for export grain, and application to this effect was made to the Joint Traffic Commission. The commission decided to grant the reduced rate for October, and so notified all the roads interested.

—The *American Agriculturist* comments on the impression made upon the commissioners sent to the United States by Germany to investigate the possibilities of beet-sugar production in this country and to report whether there may be steps taken which will permit the German beet sugar producer to hold his American trade, and expresses the opinion that the report made by the commission had something to do with the action of the German Government in increasing the export bounty on sugar, the idea being "that heavy shipments to this country and lower prices would discourage the industry here."

—There is such a rush of American food products for export that all ocean going vessels are sold up in freight for two months ahead. The thousands of cars that have gone to the Atlantic seaboard laden have gone back empty.

American Cut Soles for Mending.

UNTIL 15 years ago American cobblers bought whole sides of sole leather, or parts of sides, and cut off half soles and top-pieces as their mending jobs required. Now they buy their soles, half soles and top pieces ready cut and sorted, and gain by it. Cutting and sorting soles, half soles and top pieces is a business by itself.

The cutter and sorter buys in very large quantities; takes his choice of the output of hundreds of tanneries; buys with advantage; cuts by machinery; cuts the shapes required with the least possible waste, to the greatest possible advantage, and at the least possible cost; assort his product, first by quality, second by thickness; stamps it and ties it in packages of a dozen pairs.

The cobbler buys whatever he wants by the dozen pairs. If his work requires the best, he buys the best; if he does coarse work, he buys coarse leather; if his work is between the two, he buys accordingly. He pays less for his leather, because he has none left over, because he does not buy what he has no use for.

THE SORTING.

The whole side is cut into soles and top-pieces; except the belly, shank, head and tail, which are sold for what they will fetch for other uses.

The best leather is near the back, and the poorest is towards the head and belly; but one animal yields a better hide than another, and one tannery makes a better leather than another. This makes strict inspection of every sole a necessity.

The American sole cutters buy the best leather, reject the worst parts of a side, cut the rest into such stock as each part is most suitable for; then skillful inspectors sort the whole output into eight qualities and from six to thirteen thicknesses in each quality.

These inspectors, inspecting sole leather all the time, year after year, acquire such skill that their work is surprisingly accurate. No mere worker in leather can ever become so expert a judge of leather as such an inspector. That is, no matter how good a judge of leather such worker may be, his skill does not equal that of the experienced inspector whose grading for quality is accurate far beyond his possible appreciation. Any person can see how true the grading for thickness is by measuring packages.

The soles are sorted to eight qualities: firsts, seconds, thirds, fourths, fifths, sixths (middle soles), slightly branded and branded.

The thickness is measured by dozen pairs. A dozen-pair package, wired, is from $3\frac{1}{2}$ to 7 inches high: $3\frac{1}{2}$, $3\frac{3}{4}$, 4, $4\frac{1}{4}$, $4\frac{1}{2}$, $4\frac{3}{4}$, 5, $5\frac{1}{4}$, $5\frac{1}{2}$, $5\frac{3}{4}$, 6, $6\frac{1}{4}$, $6\frac{1}{2}$, $6\frac{3}{4}$ and 7.

The difference in the thicknesses of two adjoining grades is only about a hundredth of an inch on one sole.

A package contains a dozen pairs, all sizes, one quality, one thickness. Prices are made by the dozen pairs; that is, by the package. The better the leather, the higher the price, and to this extent the price is according to quality. The thicker the leather the higher the price, and to this extent the price is according to weight. The average price is about the same as for whole sides or strips, if due allowance is made for waste, such as scraps and heads, bellies, shanks, etc. As the sole cutter bears all waste, the buyer of cut soles has no waste to lose.

The difference between the old way and the new may be seen from the following contrast:

The cutting and sorting of 1,000 sides of the best leather yield about 40,000 pairs of half-soles of all grades in this proportion:

	Pairs.
Firsts.....	10,000
Seconds.....	7,000
Thirds.....	8,000
Fourths.....	9,000
Fifths.....	2,000
Sixths.....	1,000
Slightly branded.....	2,000
Branded.....	1,000

about 40 per cent. of the weight which is not cut, but sold for what it will fetch for other uses; and 10 per cent. of scraps, which are sold for little money. About half is saved for stock, and half lost as offal and waste

So, if a worker should cut one side into half soles and sort them, as our American cutters do, he would get the same proportion, thus:

	Pairs.
Firsts.....	10
Seconds.....	7
Thirds.....	8
Fourths.....	9
Fifths.....	2
Sixths.....	1
Slightly branded.....	2
Branded.....	1

about 40 per cent. of the weight of the side in belly, head, shank, etc., which he may or may not have use for; and 10 per cent. or more of scraps—half stock and half waste. These grades of leather are in it, whether distinguished or not.

American sole cutters cut and sort thousands of sides systematically and accurately. The worker may consider 50 per cent. of stocks as all good leather; but when he comes to use it he picks out half-soles and top pieces to suit the particular job he happens to have in hand, from what is left of his one side. The worker and the wholesale cutter do the same thing. The latter does it according to the judgment and faithfulness of men trained for the work. The workers do it as well as they can, having only one diminishing side of sole-leather to cut from, and having to use all of it.

The man who uses sorted cut soles has leather to suit his work. But he

who buys whole sides, must use all grades from the best to the worst. He has his choice of leather to this extent: he can give the different qualities (best, middling, coarse and worst) to whom he chooses, but he cannot give all his customers suitable leather, because he hasn't enough to go round, and he has unsuitable leather that he must use.

Thus it is that the American sole cutters have advantage enough to enable them to serve every worker better than he can serve himself, and to make a profit.

Export Lumber Trade.

TEXAS lumber manufacturers are doing a thriving export business. According to the newspaper reports the export demand is now taking the cut of the mills round about Beaumont, and this condition will remain unchanged for several months before the existing orders are well filled. According to one of these reports the Beaumont Lumber Company have ready on its wharf stacks of small material for South America and Germany, ties for Mexico and in the river hundreds of square timber for the British markets, the whole presenting an encouraging view of the development of this feature of the sawmill business while the Tram and Reliance wharfs exhibit like evidences of activity; and besides the large number of timbers that are thrown into the river to be rafted down to the pass, these companies are daily making large shipments by rail to be loaded on ships in port and to arrive.

The present business through Sabine Pass is being done almost wholly by mills in Beaumont, and while it is quite large enough to attract attention it is small compared with what may be expected in the course of a few months, when the cargoes that have been placed by the exporting firms recently located there begin to move. These cargoes have been placed with mills at other points, and ships to take them away have begun to arrive. Millmen have satisfied themselves that they can get out in an acceptable manner any schedule that may be presented. At the outset they were disinclined to accept an order for a cargo of primes, but experienced inspectors from the Eastern Gulf ports, having carefully examined that which they have cut and pronounced it absolutely faultless, they now feel satisfied of their ability to saw this class of material, and as the price is generally good it is not unreasonable to expect that there will be a decided increase in the shipments of this class of stock.

There is, in fact, every indication that the mills on the Southern Pacific in Texas will soon be shipping the larger part of their product by water, and when they get fairly into the foreign trade and begin sawing the varied dimensions demanded by the several countries they will cease manufacturing in considerable quantities low priced yard stock.

Oak Staves Exports from New Orleans.

ACCORDING to Messrs. Bobet Bros. the total export of oak staves from the port of New Orleans from Aug. 1, 1895, to July 31, 1896, to foreign and domestic ports were as follows:

To—	Pieces staves.
United Kingdom.....	1,804,956
France.....	547,507
Spain.....	3,807,862
Portugal.....	1,658,525
Germany and Holland.....	485,181
Belgium.....	53,221
Italy.....	128,904
Domestic ports, large part of which for shipment to foreign ports.....	241,532
Total.....	8,727,688

The value of these exports was \$1,225,000. In addition to the above, 5,105,742 pieces of dressed and tank staves were exported during the same period to European ports, the estimated value of which was \$400,000.

Foreign Demand for American Slate.

A DISPATCH from Allentown, Pa., September 4th and published in *The Manufacturer*, of Philadelphia, says the slate manufacturers of that region are developing the foreign market. "The Carbon Slate Company, of Slatington, received five orders this week for roofing slates from their representative and partner, R. G. Pierce, who has been soliciting orders in Europe for the last three months. The amount of orders received this week was 3,700 squares, or 73 car loads, which is in addition to other orders which they have on hand from abroad of 1,500 squares, or 28 carloads, which will be shipped during this and next month. The total amount is 5,200 squares, 101 cars.

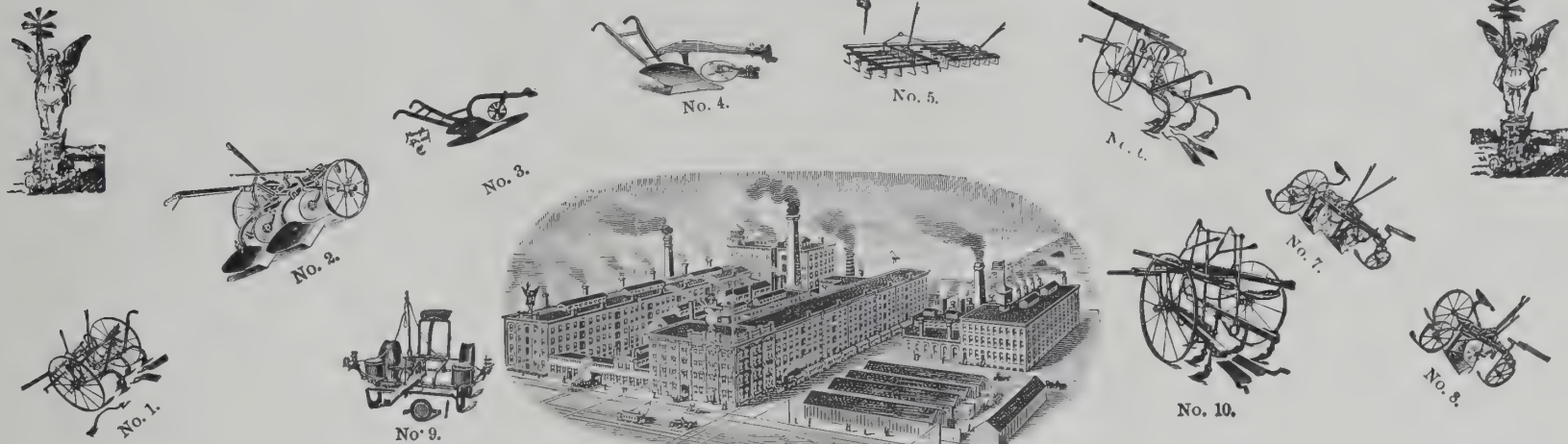
"The same company exported during the last eight months 11,000 squares, 210 carloads, and expect to be able to ship 20,000 squares abroad this year, be sides 15,000 squares for home trade. They also expect to ship 200,000 square feet of slate blackboards for school purposes.

"The Carbon Slate Company was one of the first to believe in a foreign market for their production. But for this export trade the slate quarries of Slatington would be working on half time."

—It is reported that American capitalists are preparing to establish a steamship line between San Francisco and Vladivostock, Siberia. If that were done it would give the United States direct communication with St. Petersburg as soon as the military line to Vladivostock is opened. It would enable Americans to ship on their own and Russian lines products directly into Russia, and might open a new field for commerce.

MOLINE, ILL.
U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
U. S. A.

MANUFACTURERS OF THE BEST GRADES OF

Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes, Beet Machines. Etc.

No. 1 Dandy Combined Riding and Walking Cultivator.
No. 2 Wheel Walking Gang Plow, 24 inches.

No. 3 Steel Beam Plow with Rolling Coulter S. B.
No. 4 Wood Beam Plow with Rolling Coulter. F. O. B. NEW YORK.

No. 5 Steel Lever Harrow.
No. 6 New Western Cultivator.
No. 7 Flying Dutchman Gang Plow.

No. 8 Flying Dutchman, Jr., Sulky Plow
No. 9 Moline Champion Corn Planter
No. 10 Dutch Boy Riding Cultivator.

Foreign Agencies:

PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.
JOHN & JOSEPH DRYSDALE, Buenos Aires, South America.

Send for New Catalogue.

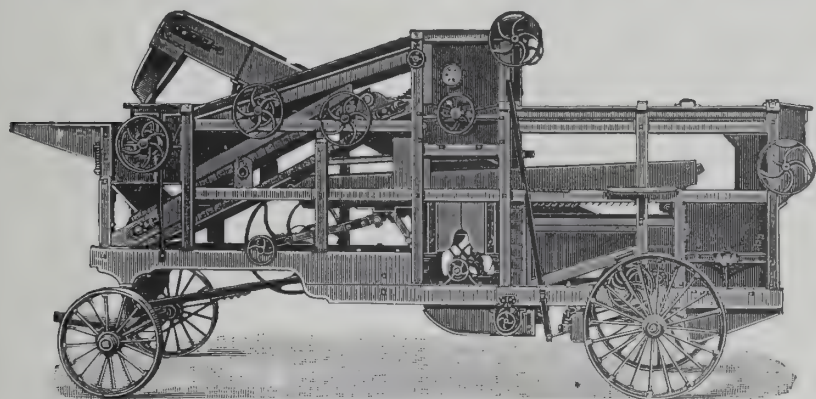
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MANSFIELD, OHIO, U. S. A.

MANUFACTURERS OF

**Thrashing Machines, Saw Mills,
STATIONARY, PORTABLE AND TRACTION ENGINES,
Horse Powers,
Tubular Boilers and Iron Tanks**

OF ALL KINDS AND SIZES FOR LOCOMOTIVES



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COFFEE MACHINERY.**The Monitor Coffee Separator and Grader**

Will make clean separations and grade in one operation.

The Monitor Coffee Milling Machine,

The most perfect miller for coffee ever offered. It will do the finest work on tender as well as hard coffees, and do it without waste or breakage.

These Machines are in successful operation in many of the largest Coffee Houses in this country, and are well worthy of investigation by Handlers of Coffees.

Can be bought direct from manufacturers or through any reliable exporter.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

Is SUPERIOR to "CORN STARCH," "ARROWROOT," "SAGO," Etc.

TRADE **MAIZENA** MARK.
(DURVEA.)

Gold Medal Awarded
"MAIZENA."

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

ENCOMIUMS TO ITS MERITS:

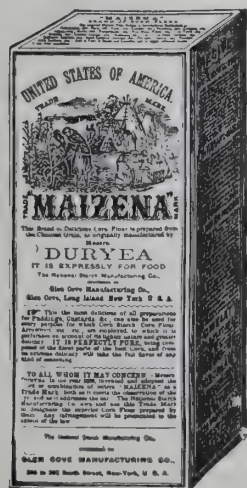
LONDON, 1862. "Supremely Excellent."
BRUSSELS, 1876. "Notably Excellent."
PARIS, 1887. "Perfection in Preparation."

CENTENNIAL, 1876. "Notably and Absolutely Pure."
PARIS, 1878. "Best Produced of Its Class."
FRANKLIN INSTITUTE. "Superior Merit."

Paris Exposition,
1889.

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U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and ½ lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

None GENUINE without "DURVEA" appearing on the face of Package.



Our Foreign Trade.

THE imports and exports of the United States for 1893, 1894, 1895 and 1896 are reviewed in detail in a statement compiled by the Agricultural Department. The statement shows that during the ten years ended June 30 last our total exports amounted to \$8,357,077,607; imports for the same period being \$7,656,127,784. The total commerce of the United States, including imports and exports, for the decade was \$16,013,205,388, or a yearly average of more than \$1,600,000,000. Compared with the annual average of this 10-year period, the statement says the figures for 1896 show an upward tendency, not quite so marked as the gain over 1895, but sufficient to warrant the hope that unless some new disturbing factor arises the commercial depression of 1894-'95 is a thing of the past, and our commerce, the measure of general prosperity, will soon resume its former dimensions.

During the fiscal year just ended the American farmers sold to foreign nations, \$570,000,000 worth of their produce, a gain of \$17,000,000 over the preceding year. The sale abroad of our manufactured products gained \$44,000,000 for the year. It is shown that many of our principal farm products, like cotton, wheat, lard, bacon, leaf tobacco, etc., brought smaller returns from foreign markets than in 1895. Wheat, flour, canned beef and pickled pork held their own, while farm animals, corn, fresh beef, hams, oleomargarine, oil cake, fruits and nuts brought better results than last year. This is particularly noticeable in corn. During the last fiscal year this country sold to the English-speaking people of Europe \$406,000,000 worth of merchandise, which is 46 per cent. of our total exports; and we bought from them \$170,000,000 worth of goods, or 22 per cent. of the total imports. All parts of the British empire in all continents bought from us \$512,000,000 worth of goods, or 58 per cent. of the total exports.

Of the more important countries that bought from us more than \$500,000 worth of goods during the year, Germany, Canada, Italy, British Australasia, British Africa, Japan, Russia and China show decided gains in 1896 over 1895. The United Kingdom shows a gain over 1895, but a falling off from 1894. A very rapid and continuous decline is shown in our exports to Cuba, which dropped from \$24,000,000 in 1893 to \$20,000,000 in 1894, declined to \$13,000,000 in 1895, and amounted to only \$7,500,000 in 1896.

The statement continues: "Our total imports during the year were \$780,000,000 worth of goods. This was a year's gain of \$48,000,000. A considerable falling off is noticeable in the import values of coffee, manufactured silks, India rubber, tea, cotton laces, goat skins and tin plates. As in exports, the United Kingdom of Great Britain and Ireland leads in imports. We obtained from English-speaking nations \$259,000,000 worth of merchandise, or 33 per cent. of the total. After the United Kingdom follow in order Germany, Brazil, France, Canada, Cuba, Japan, Italy, China and British India.

"In shipments to our shores for 1896, nearly all the principal countries show a decline as compared with 1895, the exceptions being Canada, China, Dutch East India, Belgium and Hawaii. Our imports from Cuba, which were valued at \$79,000,000 in 1893, shrank to \$40,000,000 in 1896, or a little over half of the former amount. Mexico dropped from \$34,000,000 to \$17,000,000. Compared with 1895, there is a gain in 1896 in the imports from most of the principal countries, the exceptions being Brazil, Cuba, British India, Switzerland and the Netherlands."

Pacific Transports.

IT gives a realizing sense of the new relations into which we are coming with Eastern Asia to learn that a great Japanese maritime organization has established a line of steamers across the Pacific. The steamers are of the highest grade, and our Navy Department at Washington has given permission for one of them to be received in the Government dry dock at Puget Sound. Hitherto ships of that size have been obliged to go to the British naval station at Esquimaux, British Columbia. The Puget Sound dock has recently been finished, and this will be the first use to which it is to be put. The use of the dock will be a great advantage to ships on the Pacific Coast, and will be given freely so long as it does not interfere with the need of the Government and does not entail any expense. This will be all the more needed now that the Bering Sea Commission has returned and reported that notwithstanding the depredations of the past years, there is a good chance of an agreement that will preserve the fur seal for future fishers.—*Independent*.

Figures on Electric Power.

THE ever-increasing multiplication of the uses to which electric power is being put is strikingly illustrated by the report of one of the largest electrical manufacturing companies in this country, which states that during the first six months of this year they have received contracts for over 48,000 horse-power in power machinery alone, which aggregate is greater than the total output for the last year. Each successive year has shown a large increase in the power of machinery thus supplied, but this year the increase has been unprecedented.

—Our export bicycle trade, of no account a year ago, begins to loom up in the horizon with figures of importance and full of promise if prices can be kept low. During the year ending June 30th it amounted to a total of \$1,898,012—\$1,109,885 of which were sent to Great Britain and Canada. This large trade, to some extent, resulted from the inability of the home manufacturers to supply the increasing demand; but customers thus made will now be familiar with the merits of our goods, and we ought to keep them if possible.—*Hardware*.

American Trade with Germany.

MR J. C. MONAGHAN, United States Consul at Chemnitz, now in this country, writes the Providence, R. I., *Journal* as follows concerning the prospects for American imports into Germany:

"I am home to help, if possible, to put American fruits—apples especially—into German markets. Both lines leaving this country for the Empire, viz., the North German Lloyd and Hamburg, say they can and will carry apples for 75 cents a barrel. At these rates there must be a big market. I have paid as high as \$7.50 per barrel for Baldwins in the markets of Chemnitz. Of course, quantities of no kind can be given, *i. e.*, of sales; all consuls can do, will be done. In my own city I have made efforts to interest parties, and we are willing to go further.

"There may be a temporary market for machinery. The German imitates, as well as originates. He takes machines that have not been protected by letters patent, uses them as models and constructs from them hundreds of others.

"There is a big field for bicycles that can be sold at \$50 to \$75. For the \$100 machines the field is smaller. The craze for bicycling, while not as bad, perhaps, as with us, is certainly in a somewhat advanced stage. Parties who have seen American wheels certainly prefer them to all others. Our manufacturers must learn sooner or later to 'patent' their machines in the German Empire if they want to sell them.

"Germany is to day one of the greatest industrial states in the world. You can go in and around Chemnitz and find shops every machine in which was invented in this country. Almost every machine in the training school in Freiburg was invented in the United States. The field for our manufacturers, however, is South America, Russia, and not Germany."

Our Extraordinary Exports.

THE statement of exports for August shows a continuance of the remarkable increase which has been the most striking feature of this year's trade. If the gain for the year is remarkable, that for the month is phenomenal, amounting as it does to an increase of more than 25 per cent. over the total for August, 1895.

It is probable, however, that the figures of gain for September will be still more emphatic. Our export movement is only fairly beginning. It will increase during the Autumn months, and with it will increase the revenues of all lines of transportation and the trade of all seaboard cities.

We have fairly open to us an opportunity to control the trade of the world with our manufactured goods as well as with our agricultural and mining staples. And the statistics of our growing exports show that we are getting into position to use it. At this rate we are also going to get back all the gold we need in spite of a high Bank of England discount rate.

Wooden Toothpicks.

AN extensive wooden toothpick factory, which does a large business, is located at Harbor Springs, Mich. It has a daily capacity of 7,500,000 and the toothpicks are made exclusively of white birch. The logs are sawed up into bolts each 28 inches in length, then thoroughly steamed and cut up into veneers. The veneer is cut into ribbons three inches in width, and these ribbons, eight or ten at a time, are run through the toothpick machinery, coming out at the other end, the perfect pieces falling into one basket, the broken pieces and refuse falling into another.

OUR exporters are shipping twice as much cotton to China now as in years past. Long strides are being made by the more enterprising of our domestic manufacturers in making high-class dress goods and beating foreign manufacturers. The great Pacific Mills of Massachusetts have put 48-inch wide black Jacquard satins in mohair figure that foreigners admit they cannot touch. Other fine lines of goods are on the market and sold as imported goods. The reason of this wonderful advance is our new and highly improved machinery and the French method of spinning.

—The people of San Diego, at the southern part of California, will be in high feather if the new Japanese line of ships makes that city its terminus.

—A Wisconsin concern has introduced a new hardwood flooring which seems to meet the requirements for something nice but somewhat thinner than ordinary business floors. It is three eighths of an inch thick and one and one quarter inches face. It is made by special machines.

—We are on the eve of a wonderful expansion in our textile industry. Europeans cling to old machinery and hand methods. American inventors have revolutionized methods by machinery and their work is now being felt. Our textile imports average in big years nearly \$3,000,000 per week, and that is the plum American enterprise is striking for.

—One of the fields in which of late aluminum has made most noticeable progress, is its use for sign letters, its non-corrosive nature enabling it to stand the weather equal to real gilding, which is much more costly. They can be readily attached to glass, marble or brick, and their faculty of retaining a lustre makes them especially serviceable at night.

—The town of McDonald, Pa., comes to the front with a proposed new industry in the shape of a paper shirt factory. J. S. Johnson is the projector, and the garment he proposes to make is to be worn between the under and outer shirts as a protection against the frosty winds of Winter. He is now having paper manufactured especially for this purpose, and expects to be able to give employment to about 20 women.

THE BLACK MFG. CO., - ERIE, PA., U. S. A.

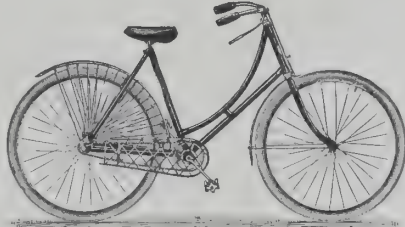
We build bicycles of the finest quality only and have nothing to offer either in cheap or medium grade wheels. Our discount for export is 30 per cent., and we deliver machines properly boxed f. o. b. New York. Order through your commission house and send copy of order direct to us.



TRIBUNE MODEL 27.
Price \$100. Weight 23½ lbs.

This is our standard men's wheel and is suitable for all kinds of road use. It is built in three heights of frames, 22½, 24 or 26½. The wheels are 28 inches diameter; 26 inches will be furnished if preferred. Gear, 68; options, 60, 63, 72, 73 or 80; cranks, 6½ inches, 7 inches if preferred. If not otherwise specified, all machines will be fitted with Hartford or Morgan & Wright tires. All wheels are supplied with tool bag, tools and repair kit. Regular finish, black enamel, nickel trimmings. If a lighter wheel than the above is desired, order should specify Model 21, which will weigh with light road equipment about 20½ lbs.

Tribune Bicycles.



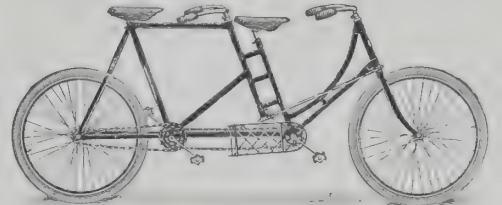
TRIBUNE MODEL 24. Price \$100.

Our ladies' wheels are built in three heights of frames, 20½, 22½ or 24 inches. 20½ inches is standard and will be shipped if not otherwise specified. Wheels, 28 inches, can be furnished, with 26 if preferred. Regular gear, 63; options, 56, 60, 68 or 72; cranks, 6 inches throw. The weight is about 24 lbs.

The Celebrated
Cycloidal
Sprocket.



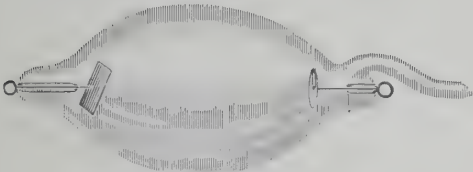
Used on
Tribune
Bicycles only.



TRIBUNE MODEL 23.
Price \$150. Weight 44 lbs.

Our tandems are also built with double diamond frame for use of men riders. Wheels are 28 inches; height of frame, 24 inches; ladies' forward frame, 20½ inches. Gear, 68; can fit with 72, 76 or 80, if desired.

"BEACON" X-RAY TUBES!

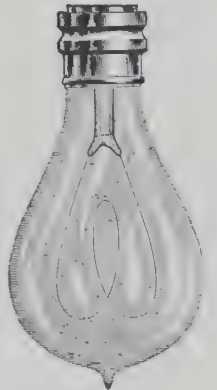


We make tubes of all the different designs, and as we test each tube before it leaves the factory, we can guarantee them to be first quality in every respect, and unexcelled by any tubes made.

"BEACON" LAMPS!

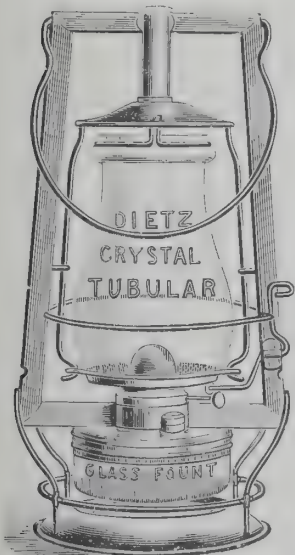
We manufacture a full line of standard and miniature incandescent lamps, ½ to 300 c. p., for all systems. We can guarantee them to be of the highest possible grade and to give undoubted satisfaction in service.

Special attention to export trade, and special discounts on large orders.



BEACON LAMP COMPANY,

NEW BRUNSWICK, N. J., U. S. A.



DIETZ Crystal Lantern

A high-grade Tubular Lantern, with a securely guarded glass found in place of the ordinary tin one. This feature permits the amount of oil to be seen at a glance, and, of course, renders leakage impossible. This Lantern has our improved side lift, and while the found is so shielded as to render its breakage improbable, if broken it can easily be replaced.

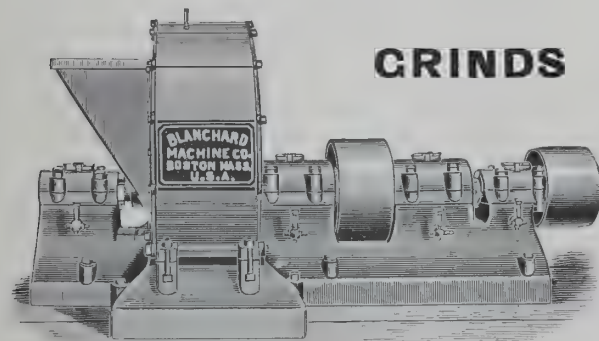
We make a vast assortment of Lanterns, and issue handsome catalogues, English or Spanish, illustrating many favorite styles—a copy of which may be had for the asking, with price lists.

This Lantern, and indeed any other one of our make, can be had through your commission agent. The list price on it is \$7.50 per dozen and the export discount 50 per cent.

R. E. DIETZ COMPANY,

Established in 1840,
60 LAIGHT ST., NEW YORK, U. S. A.

THE BLANCHARD DISINTEGRATOR



GRINDS

Bones, Tankage,
Fertilizers, Glue,
Chemicals, Soap Powder
and all similar
materials,
DRY or DAMP.

Large capacity.
No skilled attendants
No special
foundation.

SIMPLE. STRONG. COMPACT.

Write us with sample of material.

Catalogue "B" on application.

Orders filled through commission houses.

BLANCHARD MACHINE CO., 303 Congress St., Boston, Mass., U. S. A.



THOROUGHLY RELIABLE AND PERFECTLY AUTOMATIC
Designed especially for
**STATIONARY, PORTABLE
TRACTION AND HOISTING
ENGINES, TUG BOATS, ETC.**

Manufactured by
WM. SELLERS & CO.,
INCORPORATED.

Restarts instantly after a temporary interruption of the steam or water supply.

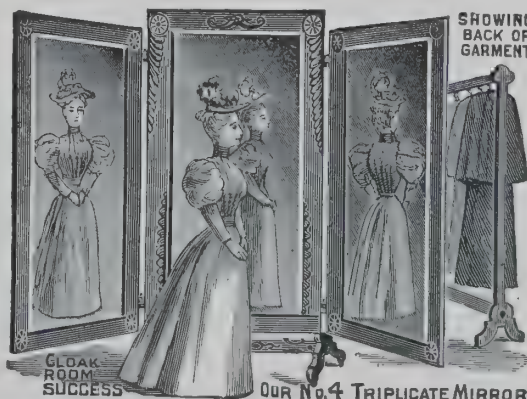
It has a wide range of capacities, and raises the water promptly with hot or cold pipes.

We invite particular attention to this latest "Sellers" Injector which we believe will commend itself to all users of large and small steam boilers by reason of its extreme simplicity, its wide range, its automatic feature and other notable advantages.

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**PATENT
TRIPLICATE
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For the Dry Goods, Cloak and Clothing Store.

Will show a full and correct view of figure, both front and back, in height and width.

Oak, with nickel trimmings and hand carvings.

Price, \$29.00.

Freight paid to all points in the United States East of the Mississippi River.

Send for Catalogue "G."

OSCAR ONKEN CO., Cincinnati, Ohio, U. S. A.

A Colossal Undertaking.

THE reports from St. Petersburg that United States capitalists are negotiating with the Russian Government for the establishment of a rapid steamship service between San Francisco and Vladivostok, if true, tends to confirm the predictions that a new transcontinental route to Europe may be a result of the near future. Vladivostok is the Pacific Ocean terminus of the great trans-Siberian railroad, now in process of construction by the Russian Government, and the movement which is said to be projected by American capitalists may have for its object a large increase of our trade with the interior of Northern Asia.

The completion of the trans-Siberian railroad, with its connections, will mean an all-rail route from the Atlantic coast of Europe to Peking and Tientsin. More than one-third of the route is already finished and 75,000 men are engaged on it at present.

The completion of this vast enterprise and the establishment of a rapid steamship service between San Francisco and Russia would very materially change the freight transportation system to China and Japan and to Asia, if it does not in addition revolutionize the passenger traffic system. The discomforts of a dreary train journey across the wastes of Siberia will be quite materially done away with through the medium of modern luxuries of railway travelling.

If, as has been predicted, a railroad will ultimately be built across Bering's Straits, with rapid transit from New York to San Francisco, and with a train travelling at the rate of American trains over the Siberian railroad, an all-rail journey from New York to St. Petersburg and Paris may be a thing of the near future. It is somewhat visionary yet, but it is a possibility nevertheless.—*The Courier, Syracuse.*

Gaining England.

THE *Syracuse Courier* in saying that it is becoming an English habit to express a preference for American cloths to those made by the British woollen industries confirms statements made in an interview with a prominent New England woollen manufacturer published in these columns last Spring. The reasons expressed by the gentleman interviewed were cogent and convincing.

English cloth manufacturers, particularly at Bradford, the centre of English woollen manufactures, are like all British manufacturers, wedded unalterably to prejudice. They manufacture goods of the same style which their fathers and their grandfathers made before them, and very much of the machinery in use is of the style in vogue a half century ago. The English manufacturer insists upon limiting the styles and colors of the cloths to a half dozen or so varieties in the belief that English taste, like English customs and habits, seldom if ever changes. The American cloth manufacturer, however, by the use of new labor-saving machinery is able to undersell the English woollen manufacturer and in addition presents to the English market 50 or more styles and varieties for the English people to select from.

As a consequence American cloths, especially trousers' patterns, are supplanting the English makes to such an extent in popular favor that a number of New England cloth manufacturers are making cloths especially for the English market and are sending their best travelling salesmen to England to bring their goods to the attention of the British public.

English prejudice against American cloths is being broken down. If favorable economic conditions continue to prevail in this country, the time is not far distant when American cloth manufacturers will be supplying England with a very large amount of their products.

American Paper in England.

THE *Paper Mill* is authority for the report that less wood pulp and more paper is being exported to England now than formerly. In 1893, 5,569 tons were exported from here to England, valued at about \$75,000, says an exchange. In 1894, 15,191 tons, valued at about \$250,000, were exported. In 1895 the exports dropped to 976 tons, valued at about \$33,000. Last year's trade was very insignificant, in fact, not amounting to one-half of 1 per cent. of the total importations into Great Britain of wood pulp during 1894. Norway, however, contributed upward of 50 per cent. of the total value, and Sweden about 33 per cent. Our American papermakers, however, are doing better in the exportation to Great Britain of white paper than pulp. There is more profit in the exportation of paper than in the exportation of pulp. There is a great future in the exportation of American papers, not only to Great Britain, but to her colonies and to other parts of the world.

—There was exported during August \$14,000,000 worth of breadstuffs from the United States. So far this year \$95,000,000 worth against \$73,000,000 same time last year. Our exports of cotton are about \$200,000,000 a year.

—There arrived at Yakima, Wash., recently a combination harvester and thresher of immense size, to be used in harvesting large areas of wheat. The machine cuts a 20-foot swath, threshing and sacking the grain as it goes, and requires 30 horses to draw it.

—The principal commodities imported by Japan are beans and peas, raw and manufactured cotton, shirtings, yarn, plate and bar iron, nails, kerosene oil, leather, railway equipment, rails, machinery, rice, sugar, wool and woollen goods. The United States is in excellent shape to furnish all these articles except rice, which goes from China, sugar from Hongkong and wood from Australia.

Carpets for the Czarina's Palace.

FOR almost the first time in history an American carpet woven on American looms by American workmen has found its way into the home of European royalty. Uncle Sam for years has been sending the products of his fertile fields across the seas—to France, Germany, Russia and all the countries of the Old World; but his wares, in the making of which artistic skill was required, have never found more of a market on the other side than could be met by the home supply.

It has been left for Her Imperial Majesty the Empress of Russia to introduce the Yankee made carpet into the royal circles of the Old World. With the exception of her Easter bonnet a woman probably finds more genuine pleasure in worrying about the price and coloring of a new carpet than anything else in the world.

Even in the pomp and splendor of the coronation the Czarina of all the Russias was like the rest of her sisters. In the Imperial Petrovsky Park palace, from which the Czar began his march to the Kremlin, there lay hundreds of yards of carpets, the like of which never had been seen in the land of the Czar. In the Sans Souci palace where the Czar held his three days' fast before the coronation, there were more carpets of the same texture and design. These were the carpets that most impressed Her Imperial Majesty, and the ones which she inquired about and made up her mind to have more of when the coronation was over.

Of course, Her Majesty, when she wants a new carpet for the front hall, does not have to worry much about the cost. Neither does she have to inquire her way to the carpet department. It is just given out that Her Imperial Majesty will be graciously pleased to look at samples at a certain hour of a certain day, and all the carpet dealers are graciously pleased to have her.

The London agents of W. & J. Sloane, the New York firm, received the summons several months ago, and the result was Her Majesty was pleased to order 3,000 yards of the American samples shown to her, and the firm's factory here is now at work filling the order.

The axminsters which the Czarina selected will be placed in the palace at St. Petersburg. In the samples shown there was nothing but what is carried in the firm's regular stock. The same carpet which covers the floors of the royal palace may carpet the library of a plain New York citizen, and already the firm has had an unusually big "run" on those particular samples. One dealer in a large Texas town has his show windows filled with them, announcing with flaring placards that they are the real and royal styles this year.

In design the carpets differ from the severe old fashion of the English make. They are decidedly French in character, and in some of them there has been a daring and radical departure from the lines laid down by British manufacturers and designers.

One of the most beautiful samples chosen by the Empress is of rich olive green, with dainty sprigs of straw colored flowers. The border is of the same shade, with festoons of flowers. Another has a sage-green background with white roses and border of the same design. There is a soft colored blue chintz with a scroll interwoven with flowers that is extremely pretty, and another one of deep red with rosebuds blossoming from it shows the excellent taste of Her Majesty. In all about eight different designs were chosen. The texture and weave of these goods are remarkably soft and fine.—*New York Press.*

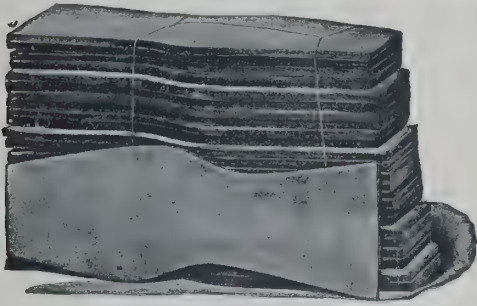
Japan to Examine Silks.

TO remove ground for complaints that have become numerous that the raw silks delivered at Japanese ports were not up to the standard in fineness or weight the Japanese Government has established conditioning houses at Yokohama and Kobe, where silks are examined and certified free of charge. These houses were opened with much ceremony, and among the speakers was United States Consul-General McIver, who reported the facts to the State Department.

CARICATURISTS in depicting a German are in the habit of putting a big pipe in his mouth. The pipe is national, indeed, but the Germans as a nation are far from being the greatest smokers. They do not smoke more than Frenchmen, Russians, Swedes or Hungarians. The men of the United States and the men of Switzerland are the most inveterate smokers on earth. In these two countries the consumption of tobacco per head is three times greater than in Germany. At the same time the United States raises more tobacco than any other country on the globe. British India comes next, producing nearly as much.

IF one should travel through Mexico, into the Central American States and thence down the Isthmus of Panama into the ten republics of South America he would find everywhere the incandescent light manufactured in Philadelphia workshops. The industry has experienced a wonderful growth during the past few years and the Philadelphia manufacturers are coming to the front in all the countries south of us. English and German firms are not "in it," to use a phrase of the street, for the Philadelphia article is superior in every way except as to price.

—Cotton exporters say that they cannot get any ships to carry their cotton from south Atlantic ports to Europe. The tramp ships in commission are carrying grain, and though the exporters have been cabling everywhere they have not succeeded in getting enough vessels to supply the demand. Before the season opened marine freight rates were high and the shipping men on this side put off engaging vessels, thinking that rates would go down by the time the cotton season opened. But the early rush of cotton to market has caught the exporters in a predicament.



American shoemakers and shoe-menders have got ahead of you. They don't buy whole sides of sole-leather now.

A shoemaker wants 2 or 3 grades and 4 or 5 thicknesses.

We cut sides, make 8 grades and 15 thicknesses, sell the cobbler the grades he wants, and the rest, including the waste, to somebody else, who wants that.

All well served; no waste; no using leather because you've got it.

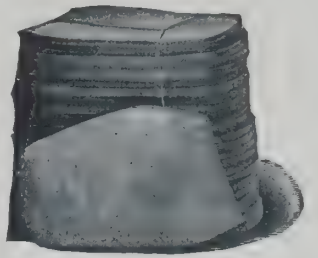
We do this business better than anybody else—it is a close wholesale business.

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FROM THE U. S. GOVERNMENT.

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Gentlemen—We have now in use in the Bureaus of this Department nearly eighty Densmore machines. We have no complaint from the users of them, hence we conclude they are giving entire satisfaction. Respectfully,

(Signed) HIRAM BUCKINGHAM, Custodian.

FREE: Illustrated pamphlet with testimonials from leading concerns.
Active, responsible **DEALERS DESIRED** in all open foreign cities.

DENSMORE TYPEWRITER CO., 316 BROADWAY, NEW YORK, U. S. A.



JENKINS BROS.' VALVES,

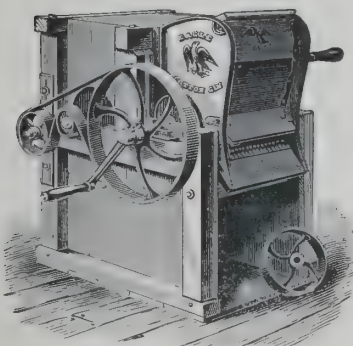
Globe, Angle, Cross, Check, Safety, Blow-Off, Etc.,

Are manufactured of best steam metal, and are suitable for any pressures of Steam, Oils or Gases. Contain Keyed Stuffing-Box and Disc Removing Lock-Nut, making them the easiest and cheapest to keep in repair. The Jenkins Discs used in these Valves are manufactured to stand High Pressure Steam. Warranted as represented. None genuine without Trade Mark. Send for Catalogue.

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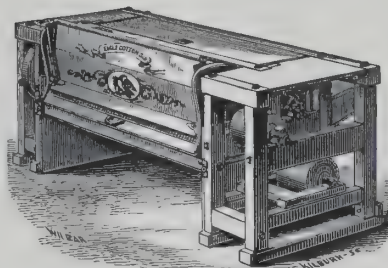
EAGLE COTTON GINS.



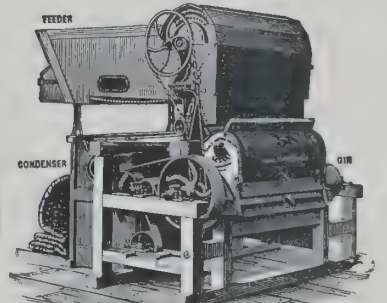
These Gins enjoy a **BETTER REPUTATION** THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are **PREFERRED** to all others made, on account of their **STRENGTH, SIMPLICITY, DURABILITY**, the amount and **EXCELLENCE** of the work they accomplish, and the **RAPIDITY** of their operation.

For further details, illustrated Catalogues will be furnished on application.

Eagle Cotton Gin Co. { FORMERLY Bates, Hyde & Co. } **Bridgewater, Mass.**



Power Gin with 12-inch Saws.



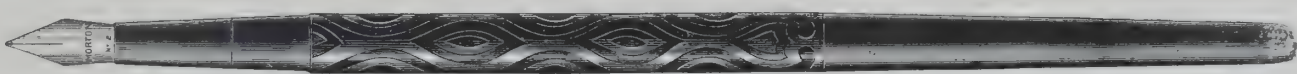
Power Gin with 10-inch Saws, with Feeder and Condenser.

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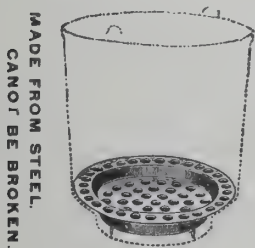
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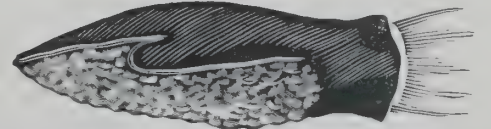
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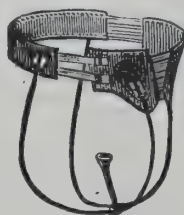
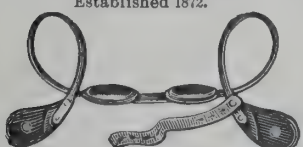
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BICYCLE NEWS.

The American Invasion.

[From the "Ironmonger," of London.]

THE SYRACUSE CYCLE COMPANY, makers of the "Crimson Rim" bicycles, are arranging to open up business in this country for next season and intend to go into the trade in a very thorough manner. Mr. John C. Bowe, president of the company, arrived not long since, accompanied by his chief selling representative, Mr. W. O. Turrell. The "Crimson Rim" machines are a very well-known American make.

A representative of Geo. N. Pierce & Co., of Buffalo, N. Y., has also been visiting this country with a view to arranging for the introduction of the Pierce machines on to the English market.

The Buffalo Cycle Company, likewise of Buffalo, N. Y., have appointed the well-known hardwaremen, J. C. Plimpton & Co., of London and Liverpool, their English representatives. This appointment was made a considerable time ago, but it is only recently that the Buffalo Company, owing to press of business in America, have been in a position to ship their "Envoy" and "Fleetwing" machines across the Atlantic. The London address of Plimpton & Co is 16 Curtain road, E. C.

The "America" cycles are on view at 1 High street, Aldgate, London, E. where a wholesale depot has been opened.

A representative of the Royal Cycle Works, of Marshall, Michigan, has been in England arranging for the introduction of the Royal cycles.

The Overman Wheel Company, of Chicopee Falls, a very large cycle-making concern, are contemplating an attack on the English market and intend to exhibit at the Stanley Show.

The Warwick cycles, also of American origin, are being handled by Hunt & Co., of Dufferin street, Golden lane, E. C. They are built with narrower treads than many American makes, and can be had, if so ordered, with detachable tires and steel rims.

It is imagined by some, and perhaps not without a certain amount of reason, that many of the American makers who have been flocking to our shores have merely come here temporarily, because having overestimated the demands of the American trade this year they find themselves at the end of the season saddled with a large surplus stock. We do not in the least suppose that many of the largest American concerns have the slightest idea of relinquishing the hold they have obtained on the English market, and this view is borne out by the announcement that the Lozier Manufacturing Company intend making 10,000 low priced machines next year for the English trade. Other firms are also endeavoring to adapt their machines to English tastes.

The possibility of the Americans attempting to push their steel tubing in this country, instead of buying up huge supplies of English tubing, as they did a year ago, has matured into a reality, and the Ellwood Welder's Tube Company have now opened an office on Holborn Viaduct. It is anticipated that American lamps and, perhaps, pedals will be largely imported for next season's trade.

AS to bicycling it is generally conceded that the English machines are not up to those of American make. The average American roadster is from five to seven pounds lighter than the English one. English wheels have from eight pounds to twelve pounds more dead weight metal. Timid ladies may be encouraged by having medical opinion on their side, but those who have already felt distinct benefit from the pastime will be inclined to snap their fingers at the doctor. Some physicians have gone the length of saying that science has discovered no new remedy for incipient brain disease equal to the bicycle. An eminent physician says that so far from being dangerous to health, it has done more to improve the health of women than almost anything that has been invented. An organically sound woman may cycle with as much impunity as a man. Women are capable of great improvement where the opportunity exists; but their dress handicaps them. The London *Daily Mail* says the invasion of England by American bicycles is an accomplished fact and that it is likely to have serious results on the trade there. It says that a year or two ago the idea of American bicycles being freely sold in the United Kingdom would have been pooh-poohed by the Britishers. To-day an increasingly large number are in use everywhere. The *Mail* adds that to some extent the competition must be attributed to the inability of the home manufacturers to supply the demand for machines, and consequently the "astute Yankee" has found a ready opening for his wares. Then, too, he is a smart man of business, and knows how to advertise, in which, by the way, as the English admit, he excels the majority of English firms. Added to this is the fact that, except in a few cases, he has an attractive-looking mount to see, and one much lighter than the average English machine. The American machines are not only lighter than the English makes, but are handsomer as well, and most of them as serviceable. An acquaintance of an editor of the *Herald* who made a tour of more than 1,000 miles in England and Scotland during the Summer just ended says that everywhere he went his mount attracted extraordinary attention. It was a 23-pound wheel, first grade. Its lightness was a continual source of surprise to the English bicyclers, and up in Scotland they positively refused to believe that rough riding could be done with such a "faery creature," although it was admitted to be of beautiful proportions. The rider mentioned roughed it from London to Ayr, yet did not even puncture a tire in the entire outing. The English and Scotch riders pin their faith to double-tubed tires altogether, and regarded the immunity from puncture enjoyed by the American to an extraordinary dispensation of providential favor.

American Bicycles Defended by an Englishman.

IT has long been claimed by wheelmen that the time would be sure to come when the great success of American bicycles on poor American roads would break through the barriers of British prejudice and open the markets of England to the high grade American wheels. Recent developments have confirmed this prediction, and already many of Europe's most prominent personages and old bicycle riders of discriminating intelligence and judgment have transferred their allegiance to machines which have been imported from the United States. Naturally, this state of affairs has awakened foreign wheel manufacturers to the necessity of meeting and stemming this threatening tide of formidable competition. The means adopted to this end are varied. While some strive to meet the advantage of American wheel makers by introducing modern American machinery into their plants, others, we regret to say, stoop to sly circumvention.

The following open letter, published in the English paper, *Cycling*, by an English rider, over the nom de plume "One Who Knows Both Sides," discloses the spirit of this latest contest for commercial supremacy along special lines, and indicates perhaps better than anything else the far reaching influence of American scientific methods and progress:

"With regard to American machinery, Mr. Belcher places himself in a ridiculous light by saying that he has some of it and wants no more, and will be pleased to sell the lot he has. Again, an effort to mislead the public. The special machinery made for cycle building by the recognized makers of accurate tools is of the very finest quality in every way—cycle mechanics outside of Humber's recognize this to be true. Another inaccuracy is the attempt to discredit the use of automatic machinery in cycle building, intimating that only cheap and nasty stuff can be built that way. It may be that Humber & Co. were unfortunate in buying poor American tools, but the fact remains undisputably that duplicate parts made by standard American companies on these automatic machines always fit in their places without the necessity of hand fitting, which is more than can be said for parts made by hand work.

"I find by reference to the Rambler catalogue that the lady's machine, having a single tube from the bracket to head is not claimed to weigh 22½ pounds, but is advertised at 27 pounds. The difference which Mr. B. discovered may be easily explained by the fact that wood rims vary from 8 to 12 ounces per pair. This seems reasonably clear to the claims made, and destroys absolutely the force of his entire argument, but on the other supports the opposite position. Passing over his opinion of the brake tackle of the same machine, and also his inaccurate statement that the spoon brake is made of sheet iron, we arrive at another statement, which is that the Rambler fork crown is a design used on boneshakers 20 years ago; as a matter of fact that fork crown, as I happen to know, is an original construction thoroughly patented, involving the use of very complicated machinery, and is the strongest crown for its weight that has ever been produced. It is a very skillful piece of sheet metal forging, and is not, as Mr. B. would lead his readers to believe, a solid chunk of malleable iron.

"In conclusion I would like to say that there are thousands of American bicycles made every year by irresponsible and unscrupulous makers, but it is idle for Mr. B., the Humber Company, or any combination of English manufacturers to undertake to maintain that the products of such establishments as the Gormully & Jeffery Manufacturing Company, Pope Manufacturing Company, the Monarch Cycle Company, the Indiana Bicycle Company, the Western Wheel Works, or any of a dozen or more of the larger and thoroughly established American concerns are not absolutely reliable and exactly as represented.

"With regard to the question of weights, there is no room for argument. The battle has already been fought out in America. The manufacturers have discovered and proven that the weights they have adopted will carry their riders, and American riders are no lighter in weight, and the roads are not so good as in England. If this were not true they would not continue year after year making light goods when it is cheaper to manufacture the heavier ones.

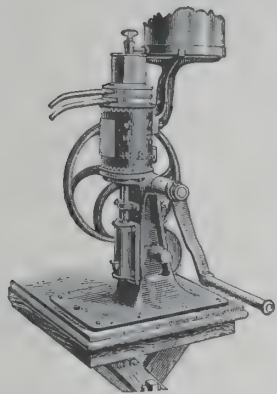
"The true reason that English bicycle weights remain where they do to-day is that the English public is a bit more conservative than the American public about changing, but the changes have to come ultimately, and it would only require a little experience with the better grades of American bicycles for the English rider to recognize the entire reliability of the lighter machines, as well as the very great difference they will make with the pleasure of cycling."

If England expects to retain her commercial supremacy of the past she must shake off the shackles of past tradition and awaken to the needs of present thought and opportunity. American machines, backed by American push, are even now making their influence felt in conservative England. And the time cannot be far distant when other American goods, the product of "Yankee" ingenuity, will force commercial recognition, to the great advantage of both peoples.

CONSULAR Agent Mertens, at the port of Valencia, Spain, reports to the Department of State that the ladies of Spain are taking up bicycles, and he thinks that this will help towards removing that barrier which prevents them from going out unless attended by some responsible duenna. American wheels are unknown in Spain yet, though an inferior French machine called "L'Americaine," and bearing a spread eagle, with the United States coat of arms, is extensively advertised. There is said to be a good chance for our wheels in Spain, as Germany is barred out by tariff discriminations, and the French and English wheels are unsatisfactory.

—Last month Messrs. Pollock & Ruos, the Doylestown, Pa., manufacturers of the Lenape wheel, received an order for 200 wheels to be shipped to England. The contract included the privilege of obtaining 600 more wheels at any time.

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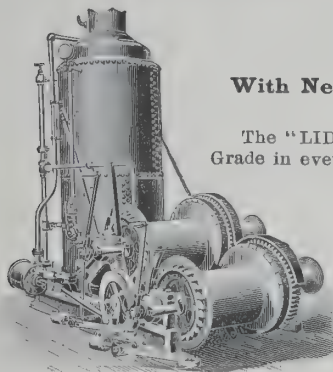
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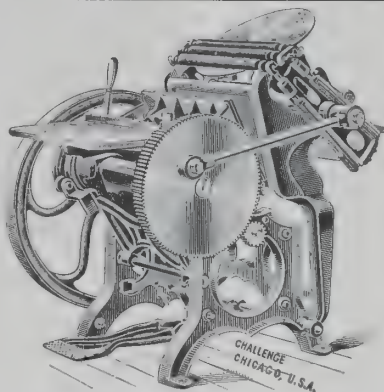
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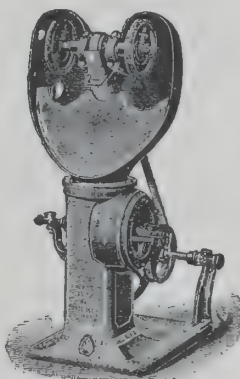
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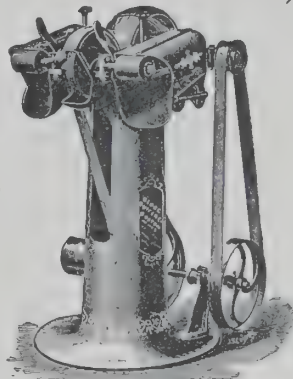
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Overproduction's Bright Side.

THE overproduction which has in the main to shoulder responsibility for the black side of the trade record of this year is not without its beneficial features. To it more than to anything else is it due that the American-made wheel occupies its present promising position in foreign markets. The increase in the home demand this year has been so enormous that only a most extravagant forecast of the season's exactions on the part of the trade generally has made possible that invasion of foreign parts by the products of American factories that has been one of the leading features of the season's business. Brought face to face with a glutted market at home, the American manufacturer has been forced to introduce his wares abroad in order to unload his surplus stock. Thus it comes about that the season winds up with many items of wreck and disaster in its record, but with the American-made wheel firmly established in the leading foreign markets and promising well to achieve supremacy therein before very long.

The foothold gained in the markets of continental Europe by American makers is pointed out and comment is made in connection therewith that is full of significance. In fact, it is by no means unlikely that the experience of American makers this year will be duplicated by the manufacturers of England next season. The flotation of new companies hungry for a slice of the huge business and big profits that optimistic calculation deduces from the experience of this year has been prodigious and the end of them is not yet. Apparently the same extravagance of figuring that characterized the trade preparations for 1896 in this country is obtaining now with the English makers in making ready for the business of next year. The natural corollary of this state of affairs will be that overproduction will drive the English maker to seek by an expansion of his continental trade to provide an outlet for his surplus stock. But by that time, quite possibly, the American maker will have so far improved his opportunities that the Englishman will find further advance in that direction impossible. Indeed, matters may shape themselves so that he will be forced to self-gratulation if the stall he formerly occupied in the continental mart be not curtailed as to space or crowded out altogether. Then would the English trade know all the demoralization and disaster that mark a hopelessly glutted market.

There is nothing but most excellent promise in the trade outlook for 1897 from the standpoint of the American maker of established reputation. With the trade winnowed by the storm of 1896 of its weak and undesirable elements, and with a considerably and constantly growing demand from abroad, the American manufacturer can look forward with well-warranted complacency to the outcome of the year's transactions. The day is not far distant when history will repeat itself and the American-made wheel will be the standard of highest excellence the world over.—*The Referee*.

FRENCH manufacturers are apprehensive over the anticipated invasion of American bicycles, and from the feverish haste with which the Chamber of Deputies has been asked for protection it is inferred that French manufacturers fear a comparison of their makes of bicycles and those which are produced in this country. This season has seen exports of thousands of wheels for foreign ports, and the outlook for next year is even brighter. There is a healthy demand for American-made bicycles in not alone France but in other European countries. The unexpected move of an American firm in establishing a French factory has produced much consternation among the makers and dealers of that country. The factory in Paris is a splendid structure, covering more than 300,000 square feet of floor space. It has a porter's lodge, general offices, a range of storerooms for 20,000 machines below and four floors above. Ample shipping facilities are afforded, as the building is close to the Seine and to the various railways.

THE invasion of England by American Cycle manufacturers is commencing now in real earnest, and if our manufacturers do not awaken to the seriousness of the situation at once they are willfully blind and woefully foolish. It is not for us to discuss the merits of the machines turned out by English and American manufacturers, nor is it our intention to institute comparisons, which for our present purpose are quite unnecessary. It is quite sufficient to point out that the public wants a good and reliable bicycle, and wants it quickly. The Americans, so far as we can gather, come here prepared to supply what is unquestionably a good bicycle, and they state that they are prepared to deliver without delay.—*English Cycling*

IT appears that a large demand is being developed for American bicycles in Australia. Large shipments are made overland to San Francisco and shipped thence by the Oceanic Steamship Company to Sydney, N. S. W., and points beyond. A leading authority says, in regard to our export trade: "The shipments of American products to Australia and New Zealand have materially increased during the past few months, and it is the opinion of some of the important houses there having New York branches, that within the next two or three months a large business will be done. Among the chief lines going are lumber, hardware, agricultural implements, manufactured leather for carriage and railway car work, harness, turpentine, kerosene oil, plaster, cotton goods, sheetings and carriage material."

—M. Clement, of Paris, who manufactures bicycles in that city, and who has previously purchased a large amount of machine tools here, is again in this country for the purpose of making further purchases for an extension of his plant.

Chance for Our Manufacturers.

A GENERAL bicycle craze has struck Bavaria, according to a report from United States Commercial Agent Carpenter at Furth. He says that the old and the young can be seen daily practicing in back yards, vacant lots and along country roads, desperately struggling to maintain an equipoise, and the apothecaries are consequently doing a brisk business in liniments and court plasters. A short time ago it was not considered at all proper for young ladies to appear on bicycles, but the strong prejudice which existed has been gradually giving way and now the ladies, married and single, and the young girls are rapidly becoming enthusiastic devotees of this outdoor sport.

The two local bicycle companies existing have begun to increase their plants to meet the rush of business and two new companies are about to embark in business before the end of the year. The consul thinks there seems to be a fine opening for the American bicycle maker, as good European wheels are sold for an exceedingly high price, and they are certainly not to be preferred to the light, graceful American machine.

Americans Hit the Bull's-Eye.

THERE is no denying, says the *Scottish Cyclist*, that the Americans are making an impression in London. One sees American machines and tires everywhere, and more particularly in the West End, where they are extensively used both by ladies and gentlemen. Leaving to others to decide the vexed question of superiority—if there be a question of superiority in it—I think that the visitors are an easy first in the art of drawing the public. To begin with, they secure first-class depots, furnish them in good, not to say lavish, style, and, what is of vital importance, keep them always bright and attractive. There's a good deal in that, more than some of the home managers are inclined to admit. With regard to advertising, the Americans are unapproachable. They hit the bull's-eye almost every time, and the reader soon becomes a buyer, if buying be his object; if not, his interest is at least aroused, and the impression will ere long be productive.

American Wheels for the Cannibal Islands.

THERE seems to be no part of the world in which the sale of American bicycles is not extending. A number have been sent from San Francisco to the South Sea Islands, where the natives don't wear much more than a racing costume. It is interesting to know that race meets have been held in Papeiti, which is on the Island of Tahiti, one of the cannibal-island groups, and also that the races were won on American wheels.

A San Francisco firm recently received an order, cash inclosed, from one of the Cook group of islands in the South Pacific, for a wheel.

In Hawaii American wheels are in great favor while in Yokohama, when the Japs held their first road-race, every contestant was mounted on a wheel of American manufacture.

Every one is aware, of course, that American wheels have been shipped to all countries of Europe. In fact, orders for wheels from Russia and all parts of Asia and Africa are so common here nowadays as to excite no comment.

Bicycles in Brazil.

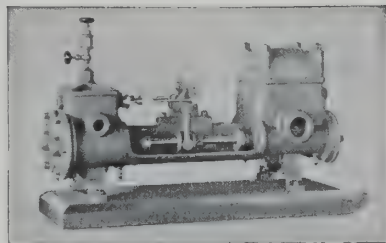
ACCORDING to the report of the French Consul at Brazil, the bicycle business there must be an exceedingly profitable one. He says: "Since the opening of the Paulo bicycle rink in September, 1895, the trade in bicycles, tricycles and similar articles has taken considerable extension in San Paulo in which the population exceeds 180,000 inhabitants, of all nationalities. The wheels imported brought high prices. The English wheels were worth from \$200 to \$220, and the French wheels from \$180 to \$200. As yet, few American bicycles have been imported, but what few dealers are receiving bring from \$50 to \$100 more than they cost in their own country."

SOME time ago the misstatement went the rounds of the newspapers that beautiful and excellent bicycles were being imported from Japan, and sold in San Francisco for \$12 apiece. A conclusive rejoinder to this we find in a recent interview with Mr. W. Araki, a leading merchant of Osaka, Japan. He said: "Our people have in past dealt largely with English firms, but are coming to see the superiority of American manufactures in many lines. For instance, we have been buying our bicycles from Birmingham manufacturers heretofore, paying from \$50 to \$80 for them, but I now find that better ones can be bought in the United States for less money. It would be a first-rate idea for American bicycle firms to send samples to Osaka, as our bicycle demand is growing rapidly."

—It is reported that the Veeder Manufacturing Company recently sold to a London house 10,000 Veeder cyclometers.

—The Syracuse Cycle Company has received an order from Stockholm, Sweden, for one of its lightest racing wheels, also for a quadruplet and quintet.

—Bicycle makers have tried to get the trade of the President's family in order to advertise their goods, but have failed. In America the President is not in the habit of making business for any firm. But in Europe it is different. Men are anxious to get royalty for patrons. Now it is announced that His Imperial Majesty, the Czar, Nicholas II., is the owner of an American wheel and is a good rider. What an advertisement this will be!

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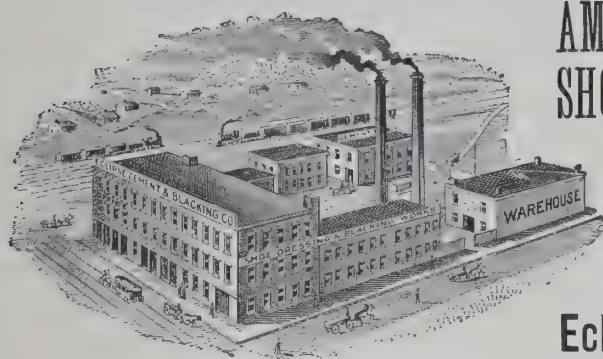
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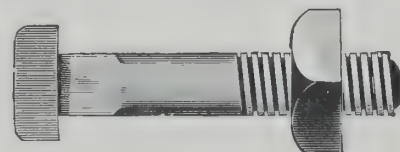
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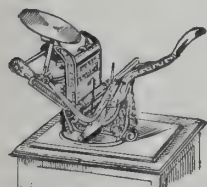
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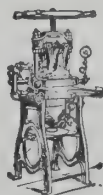


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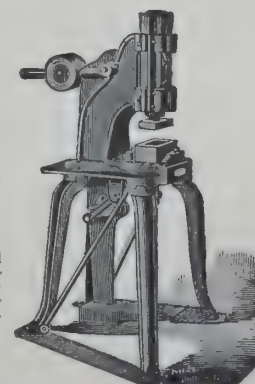
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FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denominations.	Where used.	American equivalent.	Denominations.	Where used.	American equivalent.	Denominations.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry) ..	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	214 inches.
Arabe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike fanega 70 lbs.;	Picu.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1.011 pounds.	do.....	Uruguay (double) ..	full fanega 118 lbs.	do.....	China, Japan and	133 1/2 pounds.
Arroba (dry) ..	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	7.776 bushels.	do.....	Sumatra.	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	3.888 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	do.....	Spain.....	1.599 bushels.	do.....	(hemp).	
do.....	Portugal.....	32.38 pounds.	Fanega (liquid)	Egypt.....	16 gallons.	do.....	Philippine Islands	140 pounds.
do.....	Spain.....	25.36 pounds.	Feddán.....	Spain.....	1.03 acres.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Venezuela.....	25.4024 pounds.	Frail (raisins).	Spain.....	50 pounds.	do.....	Castilian.....	0.91407 foot.
Arroba (liquid).	Cuba, Spain and	4.263 gallons,	Frasco.....	Argentine Republic	2.5096 quarts.	Pik.....	Turkey.....	27.9 inches.
Arshine.....	Venezuela.....	28 inches.	do.....	Mexico.....	2.5 quarts.	Pood.....	Russia.....	36.112 pounds.
Arshine (qu're)	Russia.....	5.44 square feet.	Fuder.....	Luxemburg.....	284.17 gallons.	Pund (pound).	Denmark, Sweden...	1.102 pounds.
Artel.....	Morocco.....	1.12 pounds.	Garnice.....	Russian Poland...	0.88 gallon.	Quarter.....	Great Britain.....	8.252 bushels.
Baril.....	Argentine Republic	20.0787 gallons.	Gram.....	Metric.....	15.432 grains.	do.....	London (coal).....	36 bushels.
Barrel.....	and Mexico.....		Hectolitre:	do.....	2.471 acres.	Quintal.....	Argentine Republic	101.42 pounds.
do.....	Malta (customs)....	11.4 gallons.	Dry.....	do.....	2.838 bushels.	do.....	Brazil.....	130.06 pounds.
do.....	Spain (raisins)....	100 pounds.	Liquid.....	do.....	26.417 gallons.	do.....	Castile, Chile, Mex-	101.61 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Joch.....	Austria-Hungary...	1.422 acres.	do.....	ico and Peru.....	
Bongkal.....	India.....	832 grains.	Ken.....	Japan.....	4 yards.	do.....	Greece.....	123.2 pounds.
Bonw.....	Sumatra.....	7.0965 square metres.	Kilogram (kilo)	Metric.....	2.2046 pounds.	do.....	Newfoundland (fish)	112 pounds.
Bu.....	Japan.....	0.1 inch.	Kilometre.....	do.....	0.62137 mile.	do.....	Paraguay.....	100 pounds.
Butt (wine) ..	Spain.....	140 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Syria.....	125 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Kota.....	Japan.....	5.13 bushels.	do.....	Metric.....	220.46 pounds.
Candy.....	India (Bombay)....	529 pounds.	Korree.....	Russia.....	3.5 bushels.	Rottle.....	Palestine.....	6 pounds.
do.....	India (Madras)....	500 pounds.	Last.....	Belgium, Holland...	85.134 bushels.	do.....	Syria.....	5 1/2 pounds.
Cantar.....	Morocco.....	113 pounds.	do.....	England (dry malt) ..	82.52 bushels.	Sagen.....	Russia.....	7 feet.
do.....	Syria (Damascus)...	575 pounds.	do.....	Germany.....	2 metric tons (4,480	Salm.....	Malta.....	490 pounds.
do.....	Turkey.....	124.7036 pounds.	do.....	Prussia.....	pounds.)	Se.....	Japan.....	3.6 feet.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Russian Poland...	112.29 bushels.	Seer.....	India.....	1 pound 13 ounces.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Spain (salt).....	11 1/2 bushels.	Shaku.....	Japan.....	10 inches.
Catty.....	China.....	1.333 1/3 (1 1/3) pounds.	League (land) ..	Paraguay.....	4.633 acres.	Sho.....	do.....	1.6 quarts.
do.....	Japan.....	1.31 pounds.	Li.....	China.....	2.115 feet.	Standard (St.	Lumber measure...	165 cubic feet.
do.....	Java, Siam, Malacca	1.35 pounds.	Libra (pound) ..	Castilian.....	7.100 grains (troy).	Petersburg) ..	British.....	14 pounds.
do.....	Sumatra.....	2.12 pounds.	do.....	Argentine Republic	1.0127 pounds.	Suerte.....	Uruguay.....	2,700 cuadras (see cua-
Cent'ero.....	Central America...	4.2631 gallons.	do.....	Central America...	1.043 pounds.	do.....	dra).	
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Chile.....	1.014 pounds.	Tael.....	Cochin China.....	590.75 grains (troy).
do.....	Darmstadt.....	110.24 pounds.	do.....	Cuba.....	1.0161 pounds.	Tan.....	Japan.....	0.25 acre.
do.....	Denmark, Norway...	110.11 pounds.	do.....	Mexico.....	1.01465 pounds.	To.....	do.....	2 pecks.
do.....	Nuremberg.....	112.43 pounds.	do.....	Peru.....	1.0143 pounds.	Ton.....	Space measure...	40 cubic feet.
do.....	Prussia.....	113.44 pounds.	do.....	Portugal.....	1.011 pounds.	Tonde (cereals)	Denmark.....	3.94783 bushels.
do.....	Sweden.....	93.7 pounds.	do.....	Uruguay.....	1.0143 pounds.	do.....	do.....	1.36 acres.
do.....	Vienna.....	123.5 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tondeland.....	Japan.....	6 feet square.
do.....	Zollverein.....	110.24 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tsubo.....	China.....	1.41 inches.
Chih.....	China.....	220.46 pounds.	Livre (pound) ..	Greece.....	1.1 pounds.	Tsun.....	Sweden.....	4.5 bushels.
Coyan.....	Sarawak.....	14 inches.	do.....	Guiana.....	1.0791 pounds.	Tunna.....	do.....	1.22 acres.
do.....	Siam (Koyan).....	3.098 pounds.	Load.....	England (timber) ..	Squ're, 50 cubic feet;	Tunmland.....	Argentine Republic	34,1208 inches.
do.....	Argentina Republic	2.667 pounds.	Manzana.....	Costa Rica.....	unhewn, 40 cubic	do.....	Castile.....	0.914117 yard.
Cuadra.....	Paraguay.....	4.2 acres.	Mare.....	Bolivia.....	600 superficial feet.	do.....	Central America...	38.874 inches.
do.....	Paraguay (square) ..	78.9 yards.	Maund.....	India.....	1 1/2 acres.	do.....	Chile and Peru...	33.367 inches.
do.....	Uruguay.....	8.077 square feet.	Metre.....	Metric.....	0.507 pound.	do.....	Cuba.....	33.384 inches.
Cubic metre....	Metric.....	Nearly 2 acres.	do.....	Denmark.....	82 1/2 pounds.	do.....	Curaçao.....	33.375 inches.
Cwt. (hundred-	British.....	35.3 cubic feet.	Mil.....	Denmark (geograph-	39.37 inches.	do.....	Mexico.....	33 inches.
weight).....		112 pounds.	do.....	ical).....	4.61 miles.	do.....	Paraguay.....	34 inches.
Dessiatine.....	Russia.....	2.6997 acres.	Morgen.....	Prussia.....	0.63 acre.	do.....	Venezuela.....	33.384 inches.
do.....	Spain.....	1.599 bushels.	Oke.....	Egypt.....	2.7225 pounds.	Vedro.....	Russia.....	2.707 gallons.
Drachme.....	Greece.....	Half ounce.	do.....	Greece.....	2.84 pounds.	Verges.....	Isle of Jersey.....	71.1 square rods.
Dun.....	Japan.....	1 inch.	do.....	Hungary.....	3.0817 pounds.	Verst.....	Russia.....	0.663 mile.
Egyptian wts.	(See CONSULAR RE-					Vlocka.....	Russian Poland...	41.98 acres.
and measures.	PORTS NO. 144.)							
Fanega (dry) ..	Central America...	1.5745 bushels.						

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes - ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ litre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.

Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.)
Metre equals 39.37 inches.
Decametre (10 metres) equals 393.7 inches.
Hectometre (100 metres) equals 328 feet 1 inch.
Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10 inches).
Myriametre (10,000 metres) equals 6.2137 miles.

Metric surface measures.

Centare (1 square metre) equals 1,550 square inches.
Are (100 square metres) equals 119.6 square yards.
Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.				EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.			
Length.	Surface.	Capacity.	Weight.	Notation.	1 kilometre.....	0.62137 mile.	1 mile.....
			Metric ton.....	1,000,000	1 metre.....	3.28083 feet.	1 yard.....
			Quintal.....	100,000	1 centimetre.....	0.3937 inch.	1 foot.....
Myriametre.....			Myriagram.....	10,000	1 hectare.....	2.471 acres.	1 inch.....
Kilometre.....			Kilogram.....	1,000	1 are.....	119.6 square yards.	1 square mile.....
Hectometre.....	Hectare.....	Hectolitre.....	Hectogram.....	100	1 metric ton.....	2,204.62 pounds.	1 acre.....
Decametre.....	Decare.....	Decalitre.....	Decagram.....	10	1 kilogram.....	2.2046 pounds.	1 square foot.....
METRE.	ARE.	LITRE.	GRAM.	1	1 gram.....	15.43236 grains.	1 pound.....
Decimetre.....		Decilitre.....	Decigram.....	0.1	1 hectolitre.....	2.8377 bushels.	1 grain.....
Centimetre.....	Centiare.....	Centilitre.....	Centigram.....	0.01	1 hectolitre.....	26.417 gallons.	1 bushel.....
Millimetre.....		Millilitre.....	Milligram.....	0.001	1 litre.....	1.0567 quarts.	1 gallon.....
					1 stere.....	1.308 cubic yards.	1 cubic foot.....

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

Millimetres $\times 0.03937$ = inches.	Square centimetres $\div 6.451$ = sq. inches.	Litres $\div 28.316$ = cubic feet.	Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Millimetres $\times 25.4$ = inches.	Square metres $\times 10.764$ = sq. feet.	Hectolitres $\times 3.531$ = cubic feet.	Kilogram-metres $\times 7.233$ = foot lbs.
Centimetres $\times 0.3937$ = inches.	Square kilometres $\times 247.1$ = acres.	Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)	Kilo per metre $\times 0.672$ = lbs. per foot.
Centimetres $\times 2.54$ = inches.	Hectare $\div 2.471$ = acres.	Hectolitres $\times 0.131$ = cubic yards.	Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Metres $\times 39.37$ = inches. (Act Congress.)	Cubic centimetres = 16.383 = cubic inches.	Hectolitres $\times 26.42$ = gallons (231 cu. in.)	Kilo per cheval $\times 2.235$ = lbs. per H. P.
Metres $\times 3.281$ = feet.	Cubic centimetres $\div 3.69$ = fl. drams	Grams $\times 15.432$ = grains. (Act Congress.)	Kilowatts $\times 1.34$ = horse-power.
Metres $\times 1.094$ = yards.	Cubic centimetres $\div 29.57$ = fluid oz. (U. S. P.)	Grams $\div 981$ = dynes.	Watts $\div 746$ = horse-power.
Kilometres $\times 0.621$ = miles.	Cubic metres $\times 35.315$ = cubic feet.	Grams (water) $\div 29.57$ = fluid ounces.	Watts $\div 0.7373$ = foot pounds per second.
Kilometres $\times 1.6093$ = miles.	Cubic metres $\times 1.308$ = cubic yards.	Grams $\times 23.35$ = ounces avoirdupois.	Calorie $\times 3.968$ = B. T. U.
Kilometres $\times 3,280.7$ = feet.	Cubic metres $\times 264.2$ = gallons (231 cu. in.)	Grams per cu. cent. $\div 27.7$ = lbs. per cu. in.	Cheval vapeur $\times 0.9863$ = horse-power.
Square millimetres $\times 0.0155$ = sq. inches.	Litres $\times 61.022$ = cubic in. (Act Congress.)	Joule $\times 0.7373$ = foot pounds.	(Centigrade $\times 1.8$) $\div 32$ = degree Fahrenheit.
Square millimetres $\div 645.1$ = sq. inches.	Litres $\times 33.84$ = fluid ounces (U. S. Phar.)	Kilograms $\times 2.2046$ = pounds.	Franc $\times 0.193$ = dollars.
Square centimetres $\times 0.155$ = sq. inches.	Litres $\times 0.2642$ = gallons (231 cu. in.)	Kilograms $\times 35.3$ = ounces avoirdupois.	Gravity Paris = 980.94 centimetres per sec.
	Litres $\div 3.78$ = gallons (231 cu. in.)	Kilograms $\div 1,102.3$ = tons (2,000 lb.)	

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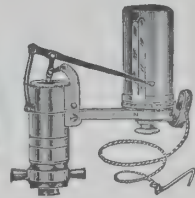
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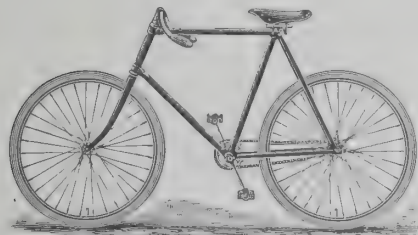
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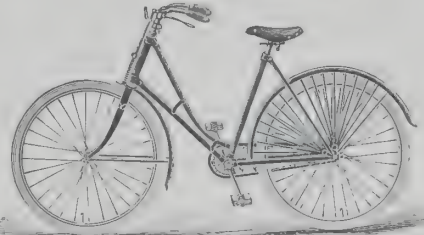


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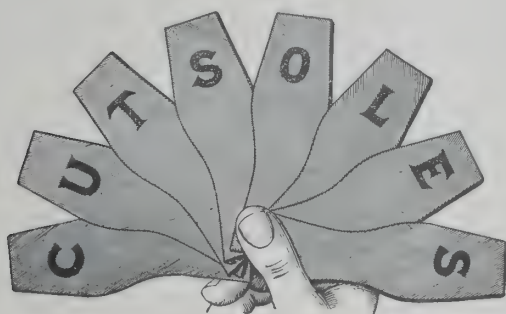


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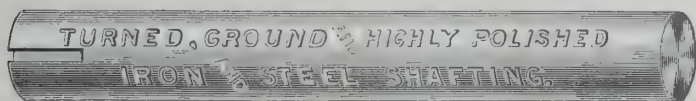
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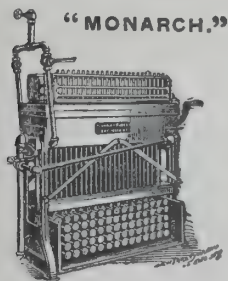
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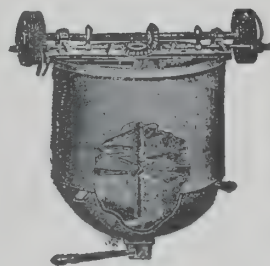
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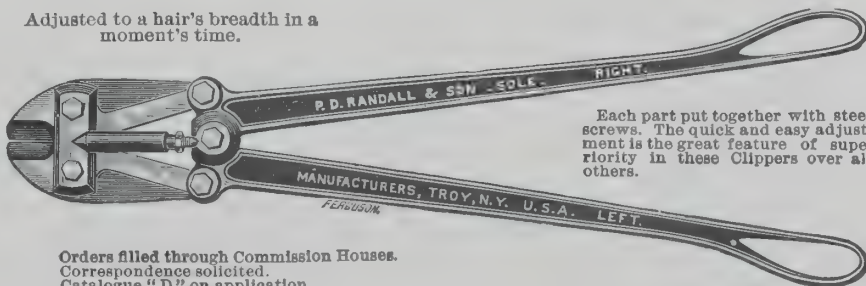
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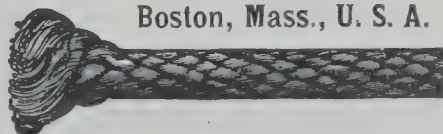
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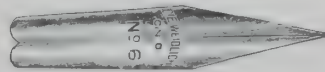
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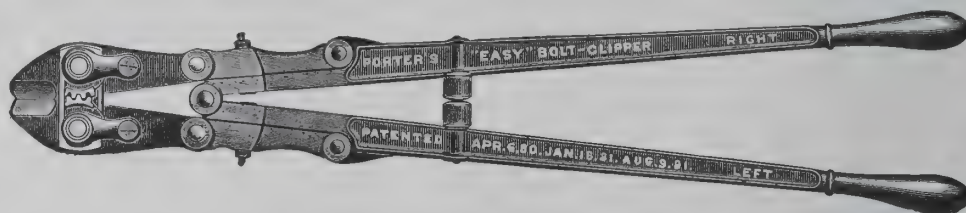
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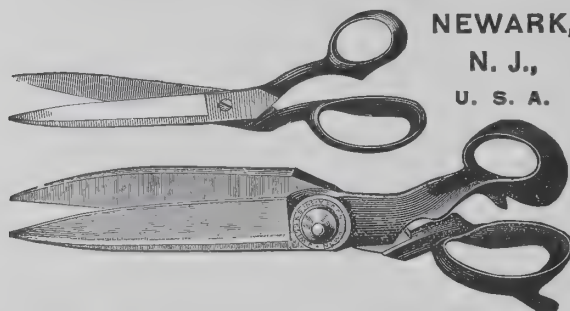
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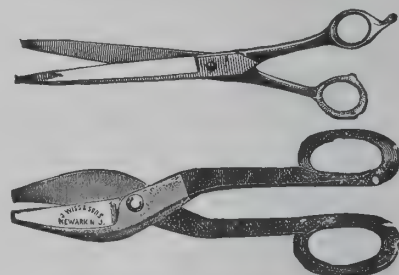
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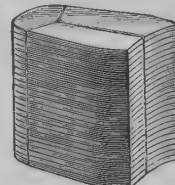
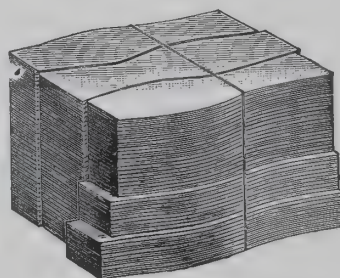
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REMEMBER, we manufacture more styles and
different sizes of Stump Pullers than any other
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These Paints are acknowledged the best manufactured for their respective uses.

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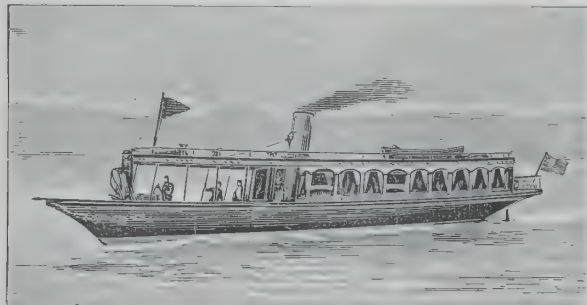
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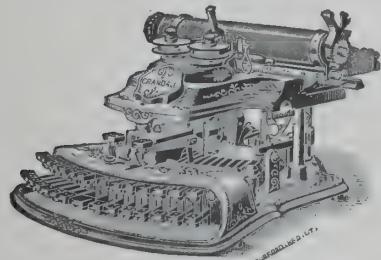
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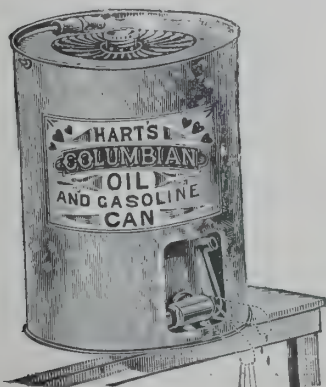
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Ivory finish, highly enameled; used all over the world; sales exceed all other makes.			
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Copper Best Paint

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Auckland, N. Z., May 20, '91

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AND COLOR CO.,
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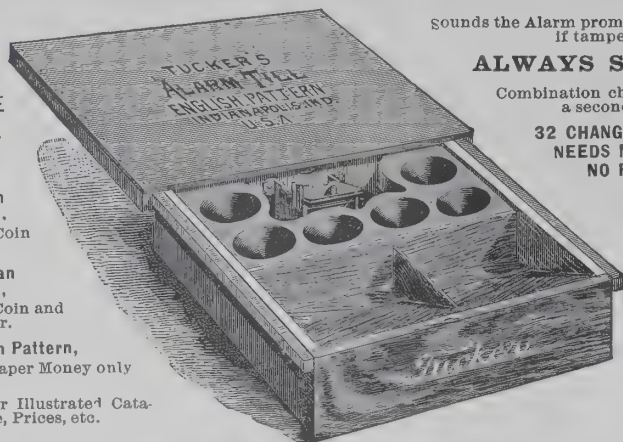


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ALWAYS SET.
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32 CHANGES.
NEEDS NO KEY.
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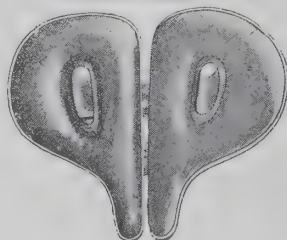
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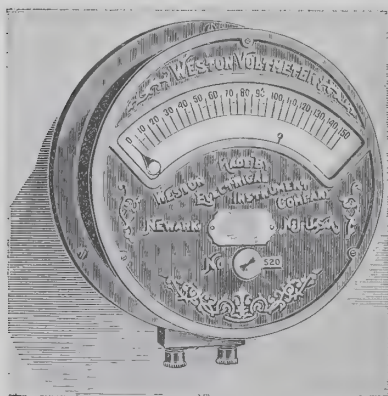
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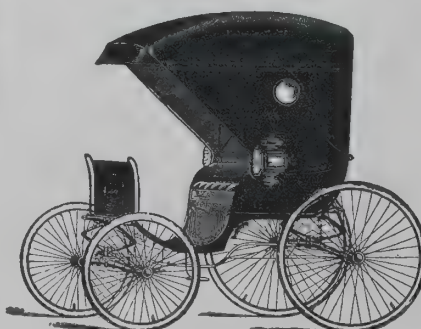


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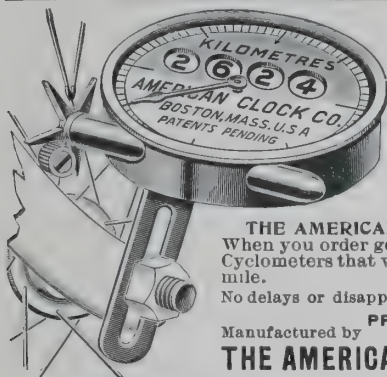
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NEW WATER MOTOR AND FAN COMBINED.

New Water Motors for Sewing Machines, Fans, Lathes, Scroll Saws, Organs, Aeolians, etc.

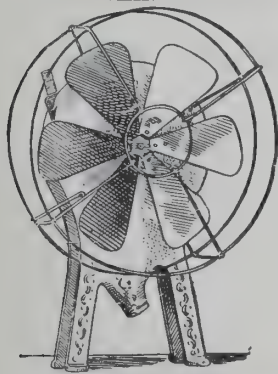
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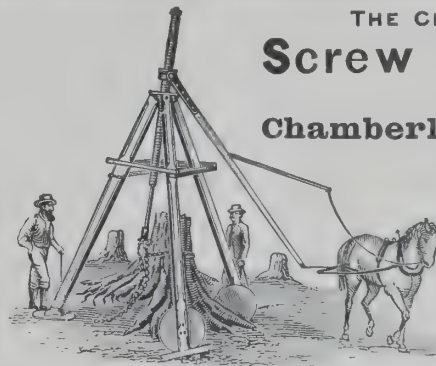
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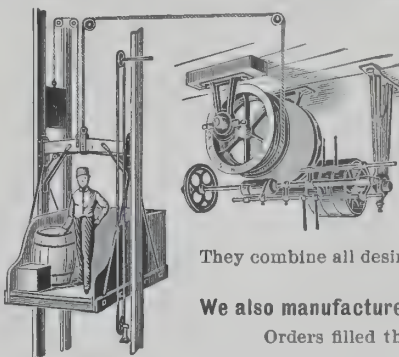
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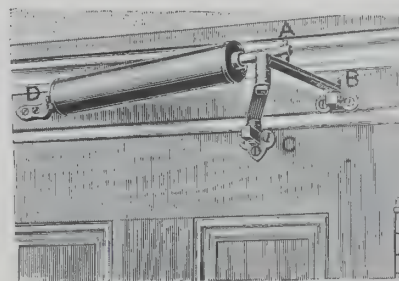
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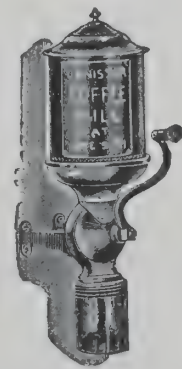
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It is direct in action, easy to apply, and gives the best results in practice, besides being the cheapest yet offered to the trade.

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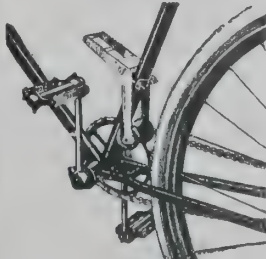
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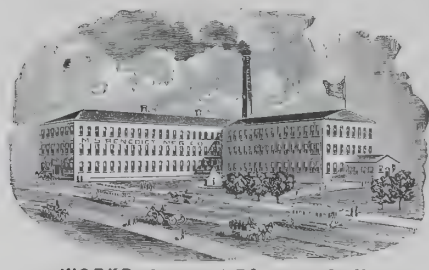
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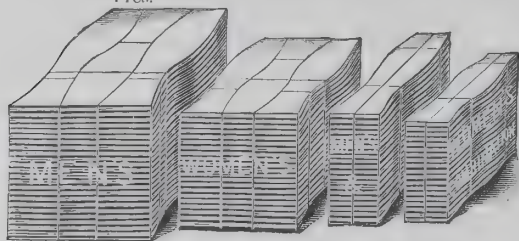
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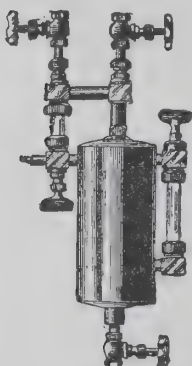
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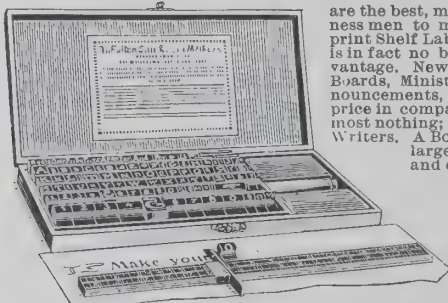
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Send for prices and testimonials.**F. H. CORNELL & CO.**

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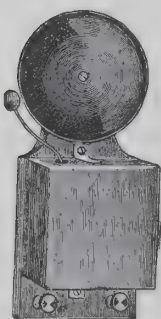
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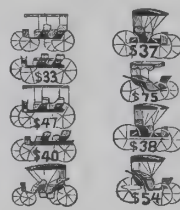
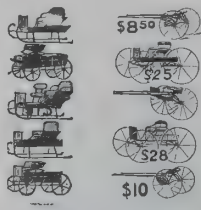
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**WAGONS AND**Australia,
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Buy our Vehicles made Expressly for Hot Climates.

Use No Other! Beware of Imitations!

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Sable Rawhide Belting**IS THE STRONGEST AND MOST PERFECT BELT
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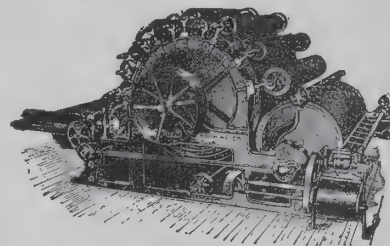
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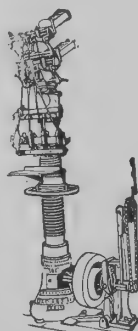
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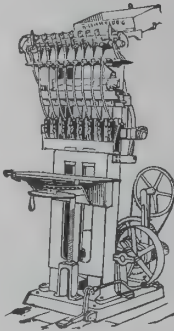
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No weight or spring on treadle to tire the operator.
Will nail cigar and other small boxes. Bottoms can be
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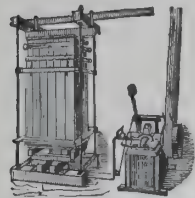
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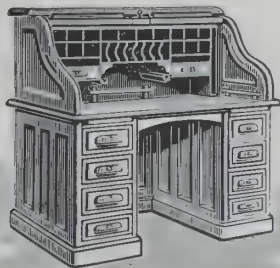
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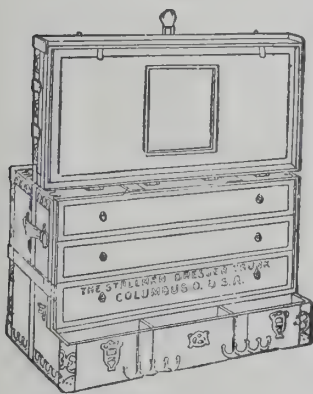
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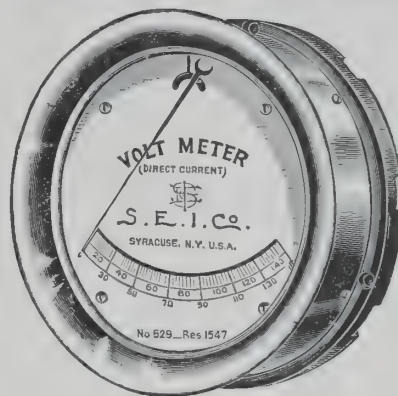
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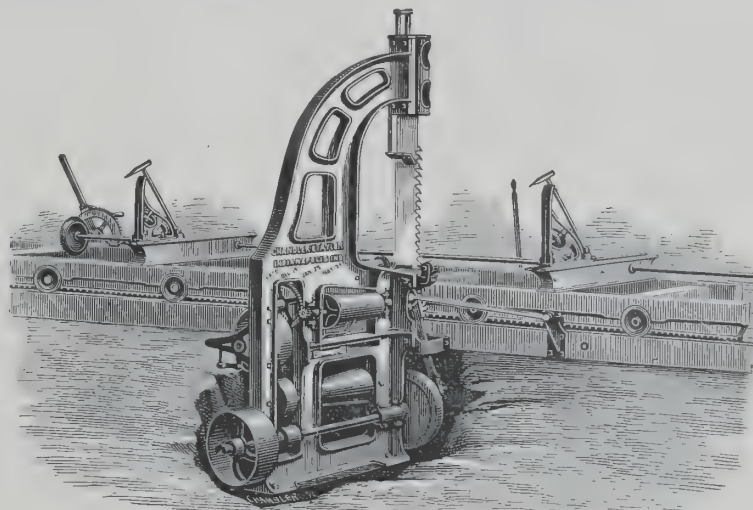
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shown here-with has a large compass of usefulness, as it will cut all kinds of lumber, hard or soft, large or small, with less power than any other kind of mill. The main frame is made entirely of iron and faced true to form bearings for the sides and other working parts. The crank shaft runs in self-lubricating boxes, into which is fitted a steel crank pin, and this crank pin in turn gives motion to the saw.

The lower end of the saw is attached to the pitman by means of a buckle and parallel rods in such manner as to produce a vertical movement of the saw on its downward stroke and gives clearance to the teeth on the upward stroke. This is a very important and valuable feature and is the key to success in operating saws with light power, as it dispenses with the use of the lower slides, keeps the saw in better alignment, admits of a continuous feed, avoids the friction of the saw teeth on the upward stroke and carries the sawdust downward instead of retaining it in the throats of the teeth.



This machine will cut boards 34 inches wide with a saw 5 feet long, having only 16-inch stroke, without choking the saw with sawdust or without heating. The feed is driven by friction and varies by tapering cones to cut from $\frac{1}{4}$ to $\frac{3}{4}$ inch at each stroke of the saw, although in hard woods of the character of Mahogany the proportion of these tapering cones is adjusted to considerably reduce this feed to suit the work required in cutting the hard woods.

The track furnished with the mill is fastened to the main frame in a manner which insures it to be at right angles with the crank shaft and of the proper height to suit the carriage and head blocks. The carriage is made in sections which, when bolted together, is of sufficient length to cut logs 20 feet long and in diameter up to 4 feet. This carriage is mounted on track wheels 8 inches in diameter, and the length of the carriage can be increased for the requirements of the purchaser, making it necessary to cut logs having a length of more than 20 feet. The head blocks may set at any distance apart to suit any length of logs, and the knees move simultaneously by a lever and pawls working in a ratchet wheel. Two head blocks are furnished with the regular pattern of mill, but the manufacturers recommend that an additional head block be supplied for each additional 12 feet of carriage over the regular 20 feet length. Any thickness of boards up to $\frac{1}{4}$ inches may be set by one movement of the lever and the graduated stop varies the thickness by sixteenths.

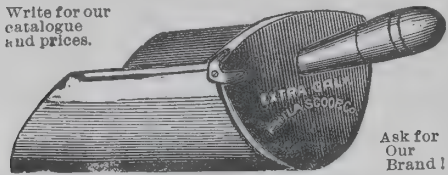
The capacity of the mill is varied by the manner in which it is handled and the size and character of the logs to be cut. With the usual size engine of 10 effective horsepower and medium-sized oak logs, from 1,500 to 3,000 feet per day would be the average. In soft woods double this amount could be reached, while in extremely hard woods the capacity is proportionately reduced.

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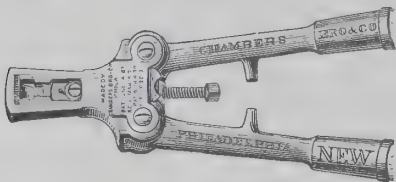
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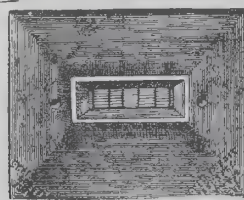
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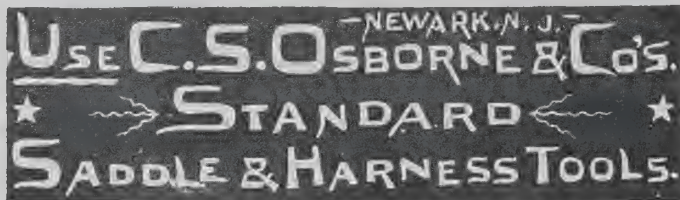
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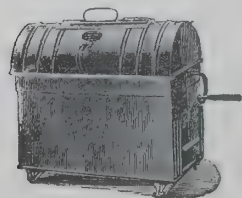
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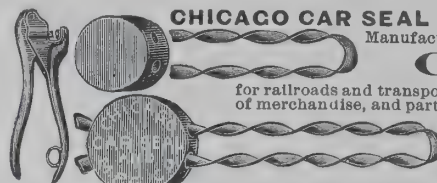
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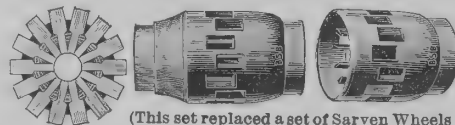
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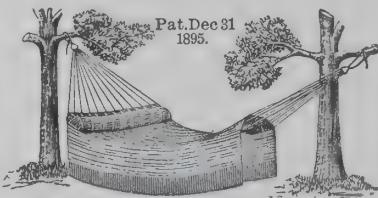


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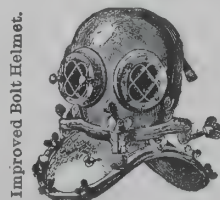
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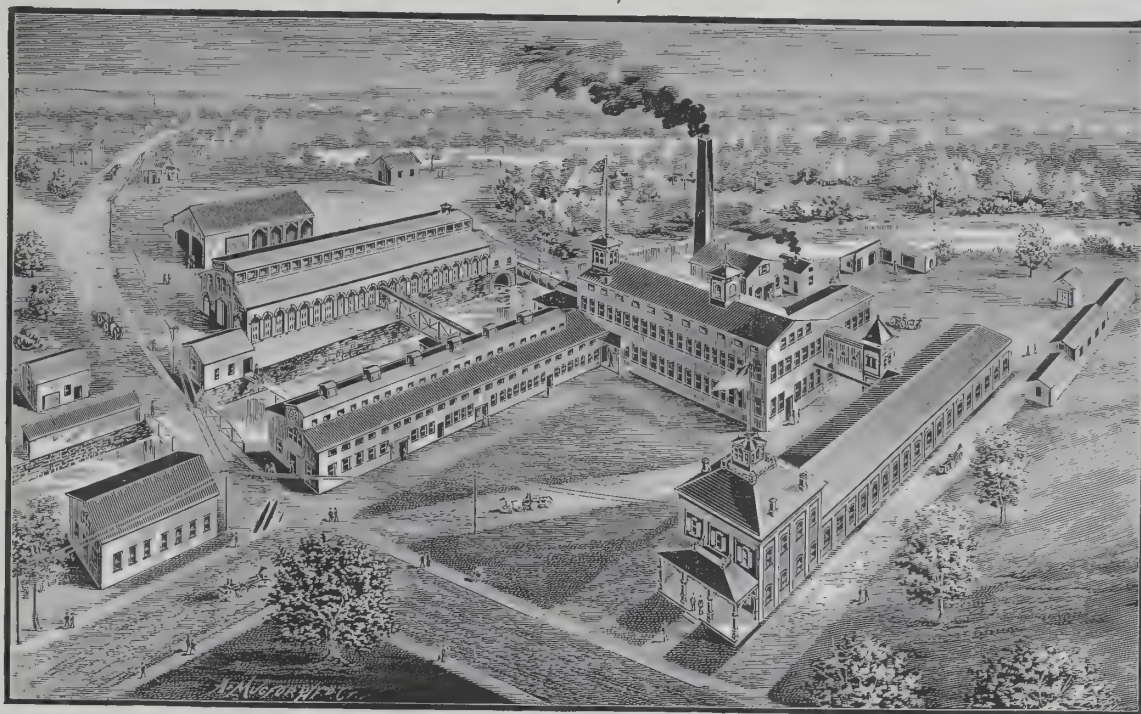
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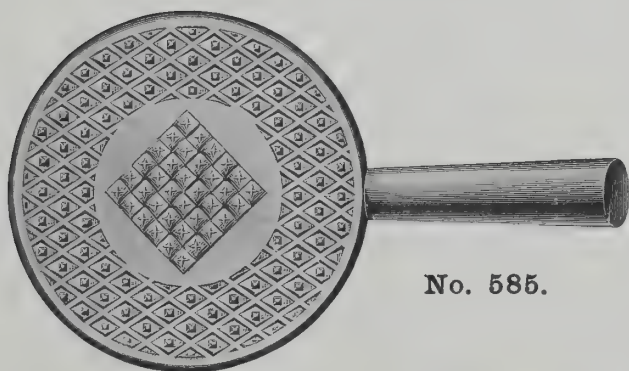


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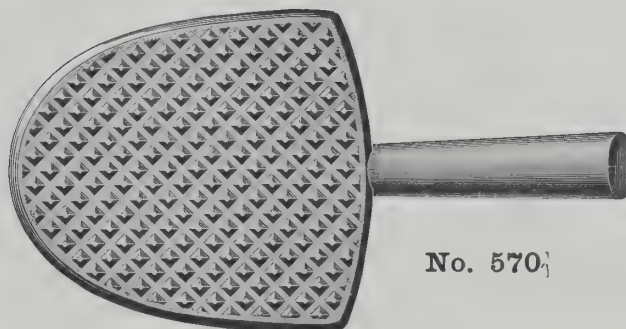


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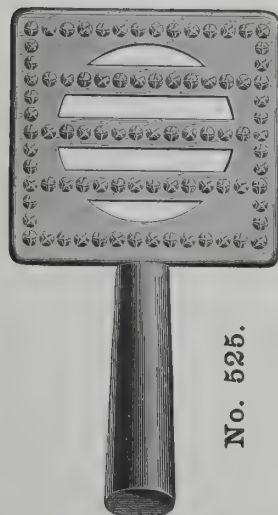
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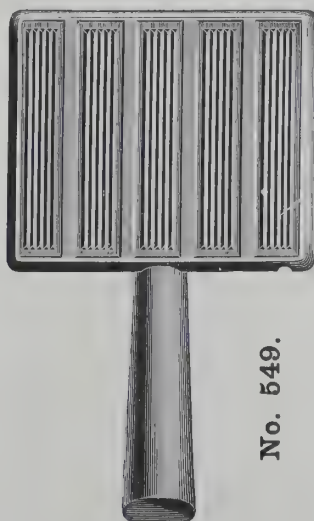
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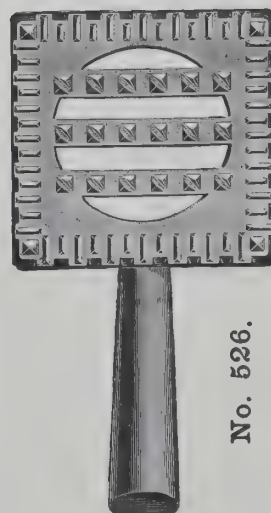
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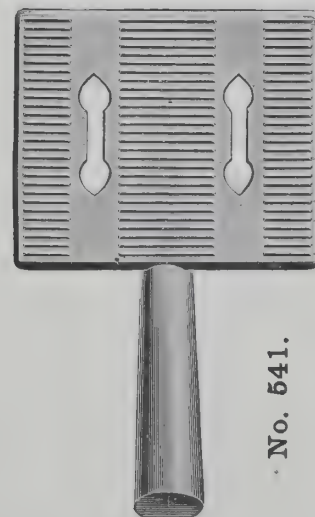
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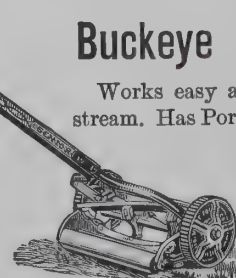


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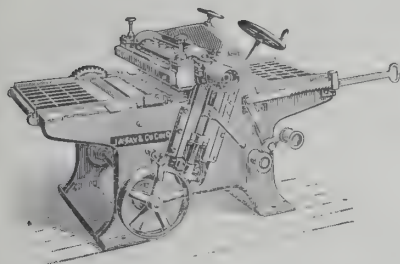
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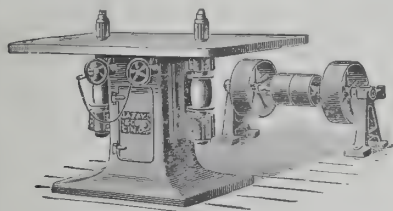
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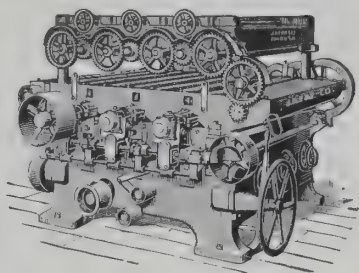


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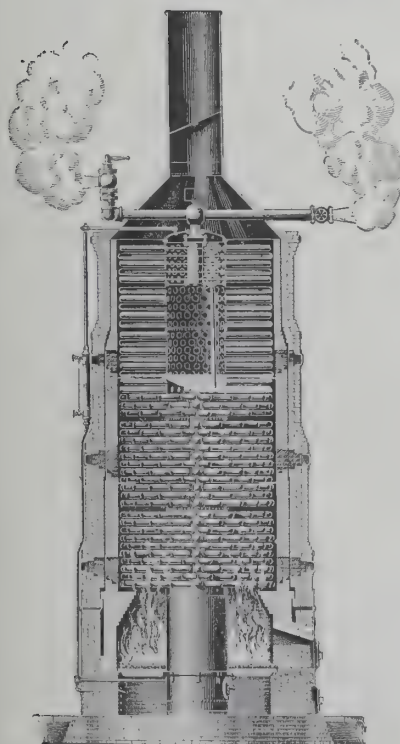
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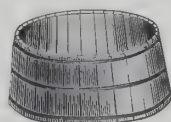
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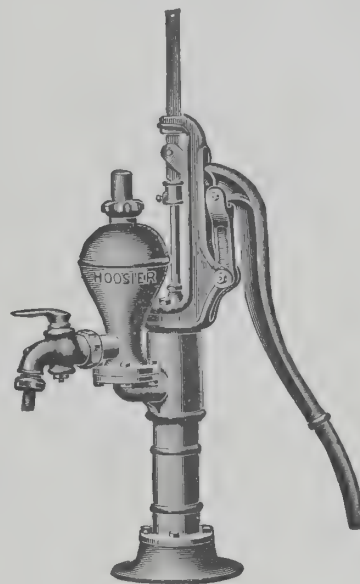
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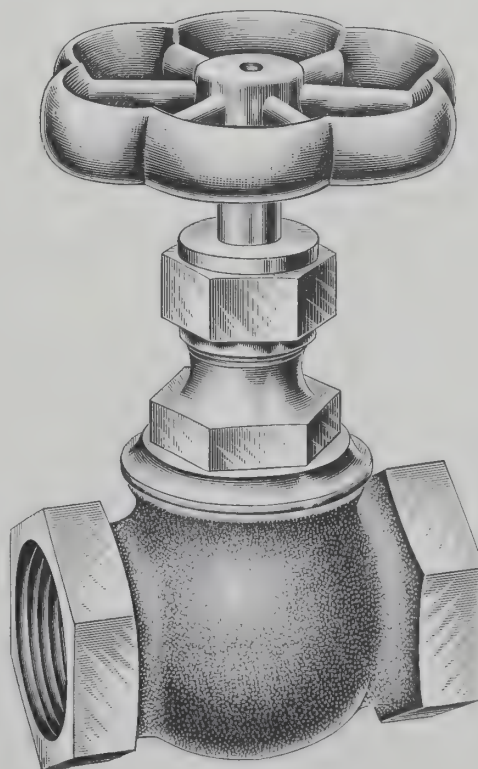
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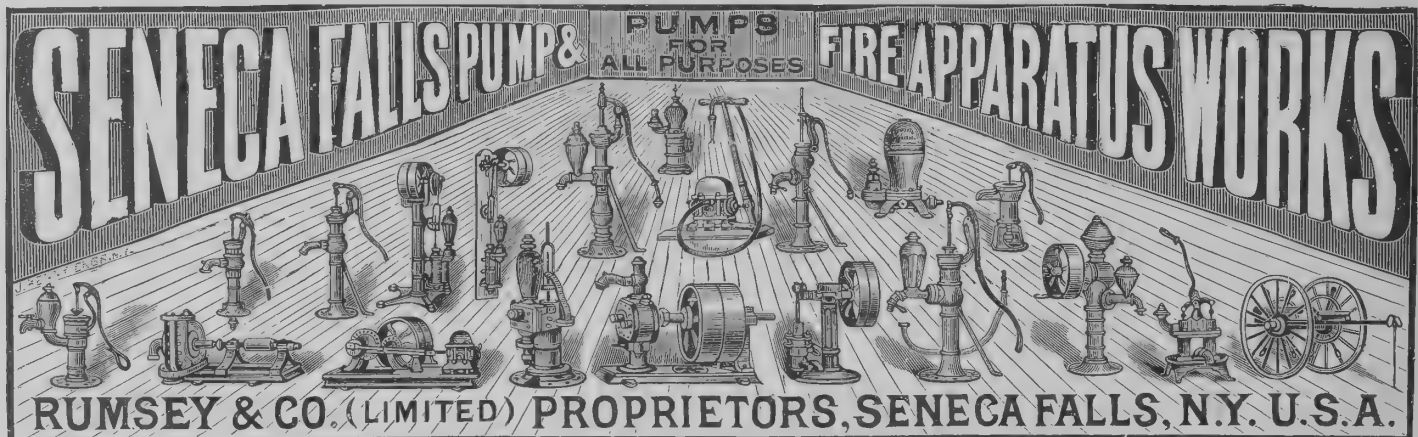
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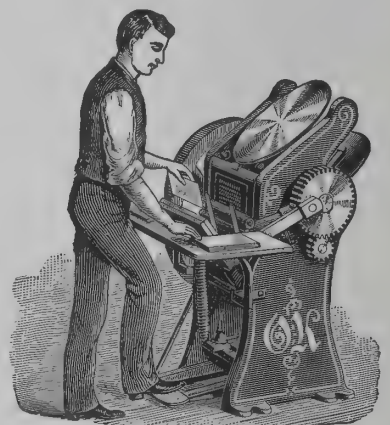
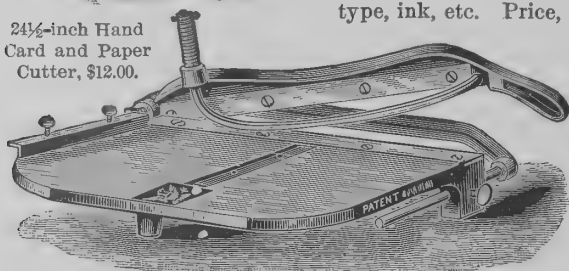
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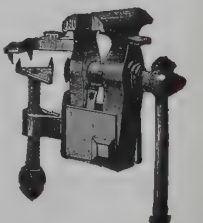
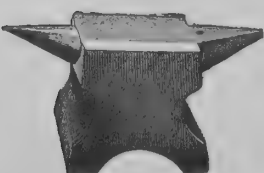
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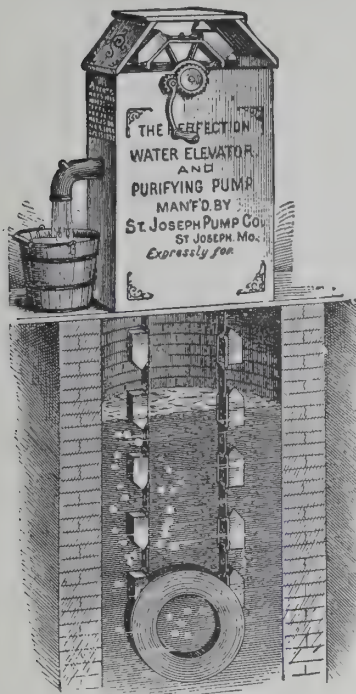
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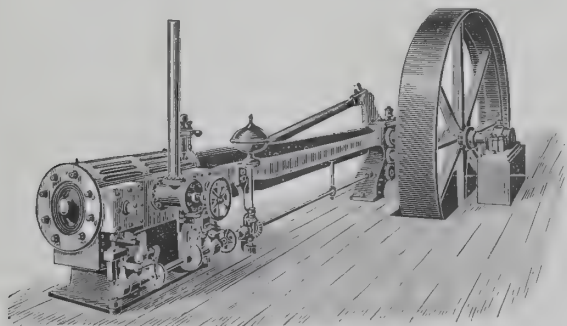
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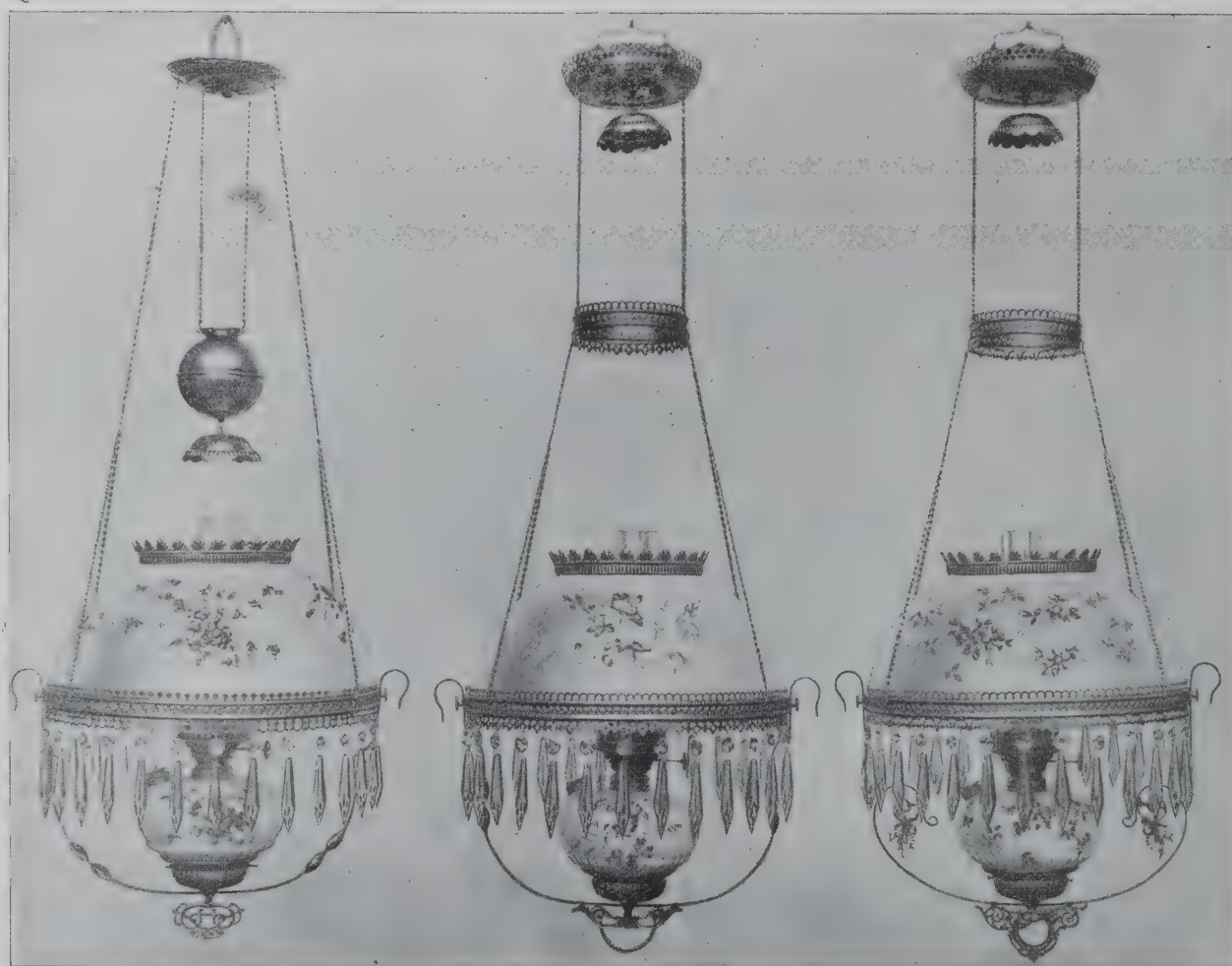
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INDEX TO ADVERTISEMENTS.

PAGE	PAGE
Abendroth & Root Mfg. Co.—Water Tube Boilers..... 1	Crosby Steam Gage and Valve Co.—Safety and Water Valves..... —
Acme Cycle Co.—Bicycles..... 35	Cumberland Iron & Steel Shafting Co. 39
Adt & Son, John—Machinery and Tools 43	Deane Steam Pump Co.—Steam Pumps 38
Akron Belting Co.—Leather Belting... 43	Dederick, P. K. & Co.—Agricultural Implements..... 43
American Lamp & Brass Co.—Lamps... 8	Densmore Typewriter Co..... 25
American Clock Co.—Cyclometers..... 37	De la Balze Hermanos..... —
American Writing Machine Co.—Calligraph..... 15	De Lamater Iron Works—Hot-Air Pumping Engines..... 23
Anderson & Co., Magnus—Exporters and Importers..... —	De Laval Separator Co.—Cream Separators..... 31
Armitage-Herschell Co.—Steam Riding Gallery..... 44	Dietz, R. E. Co.—Lamps..... 31
Aultman & Taylor Machinery Co.—Threshing Machines, etc..... 29	Diamond Hardware Co.—Stove Polishing Mitten..... 25
Ayer, J. C. Co.—Patent Medicines..... 23	Divine Bros.—Buffing Wheels..... 46
Baldwin Refrigerator Co..... 23	Donegan & Swift—Engines, Injectors, etc..... 47
Ball & Co., Dayton—Shoe Lasts..... 39	Dopp, H. Wm. & Son—Soap Makers' and Butchers' Machinery..... 38
Barnes, W. F. & John Co.—Foot, Hand and Steam Power Machinery..... 16	Doig, W. S.—Box Nailing Machines... 44
Barnett Co., G. & H.—Files..... 21	Dorman, The J. F. W. Co.—Machinery for making Rubber Stamps, etc... 38
Baxter, Schenkelberger & Co.—Cut Soles..... 25	Douglas, W. & B.—Pumps, etc..... 15
Bay State Cut Sole Co..... 44	Dry Kalsomine & Fresco Paint Works. 40
Beacon Lamp Co.—X-Ray Tubes and Incandescent Lamps..... 37	Eagle Cotton Gin Co.—Cotton Gins... 25
Bellis Cycle Co..... 37	Eclipse Cement & Blacking Co..... 38
Benedict Mfg. Co., M. S.—Silver Plated Ware..... 44	Eco Magnetic Clock Co.—Electric Clocks..... 43
Bennett & Co., H. L.—Stump Pullers... 37	Electric Emery Wheel Co..... 46
Black Mfg. Co.—Bicycles..... 32	Engelberg Huller Co.—Rice and Coffee Machinery..... 1
Blanchard Machine Co.—Disintegrators 42	Fay, J. A. & Egan Co.—Woodworking Machinery..... 5
Boligiano Co., John—Water Motor and Fan..... 43	Flagg Mfg. Co.—Shoe Machinery..... 31
Boyer, E. C.—Railroad and Wagon Lifting Jacks..... 37	Flint & Walling Mfg. Co.—Wind Mills, Pumps, etc..... 5
Brigham & Co., F. L.—Shoes..... 43	Fulton Iron Works—Sugar Cane Mills 26
Brown & Co., B. F.—Shoe Dressing... 7	Fulton Stamp Works..... 44
Brown & Co., S. N.—Wheels, Hubs, Spokes, etc..... 46	Furbush & Son Machine Co., M. A.... 44
Buckeye Incubator Co.—Incubators and Brooders..... 45	Gara, McGinley & Co.—Sheet Metal Cornices, etc..... 23
Buffalo Cycle Co.—Bicycles..... 37	Gates Iron Works—Ore Stamps and Rock and Ore Breakers..... 21
Buffalo Emery Wheel Co..... 44	General Electric Co.—Electrical Machinery..... 16
Buffalo Portable Steel House Co..... 46	Gillie, Goddard & Co.—Carousels... 46
Burgess, Edward A.—Box Nailing and Trimming Machines..... 46	Gladiator Cycle Works..... 35
Cardwell Machine Co.—Tobacco Machinery, Hydraulic Baling Presses, and Cotton Seed Oil Machinery..... 45	Globe Buffer Co.—Shoe Machinery.... 31
Challenge Machinery Co.—Printing Presses, Paper Cutters, etc..... 31	Goderich Organ Co.—Organs, Stools, etc..... 45
Chamberlin Mfg. Co.—Stump Pullers... 43	Goodrich Shoe Polish Co..... 4
Chambers Bros. Co.—Bolt Clippers.... 46	Goubert Mfg. Co..... 16
Chandler & Taylor Co.—Steam Engines and Boilers..... 41	Gould Packing Co.—Steam and Water Packing..... 40
Chattanooga Foundry and Pipe Works—Cast Iron Pipe..... 41	Goulds Mfg. Co.—Pumps of all kinds... —
Chicago Car Seal and Mfg. Co..... 46	Gout Mfg. Co., David D. A..... 43
Columbus Bolt Works—Bolt, Screws and Forgings..... 38	Green Bros.—Watchmakers' and Jewelers' Tools and Supplies..... 6
Columbus Phaeton Co..... 42	Hancock Inspirator Co.—Injectors, Ejectors and Gen'l Jet Apparatus... 21
Commercial Electric Co.—Dynamos and Motors..... 43	Harrington & King Perforating Co.—Mining Screens..... 23
Comstock Mfg. Co.—Woven Wire Mattresses, Cots, etc..... 47	Hart Mfg. Co.—Faucet Can..... 41
Crandall Machine Co.—Typewriters.... 41	Hartshorn Co., Stewart—Shade Rollers 2
Cretors & Co., C.—Peanut Roasters.... 46	Hastings & McIntosh Truss Co..... 25

PAGE	PAGE
Hauthaway, C. L. & Sons—Shoe Dressing..... 6	Philadelphia Scoop Co..... 47
Hay & Willits Mfg. Co.—Bicycles..... 35	Plume & Atwood Mfg. Co.—Lamps.... 2
Haydenville Mfg. Co.—Steam, Water and Gas Supplies..... 5	Polson Iron Works—Boilers, Engines, Steam Yachts, etc..... 7
Hazelton Boiler Co..... 5	Porter, H. K.—Bolt Clippers..... 41
Henderson & Co., C. H.—Cut Soles.... 39	Premier Pen Co.—Fountain Pens.... 25
Holmes & Edwards Silver Co.—Spoons and Forks..... 49	Randall & Son, P. D.—Bolt Clippers... 39
Horrocks Desk Co..... 45	Rhyder, W. J.—American Commercial Agency..... —
Houchin & Huber—Soap and Candle Machinery..... 39	Rockwell & Co., C. A.—Coffee Mills... 43
Hough Cash Recorder Co..... 40	Roth Bros. & Co.—Dynamos and Motors 37
Huntley Mfg. Co.—Flour Mill Machinery..... 29	Royal Remedy & Extract Co.—Sweet Wheat Chewing Gum..... 8
Hutchinson, F. S. Co.—Dumb Waiters and Elevators..... 43	Rumsey & Co. (Limited)—Pumps, Hydraulic Machinery, etc..... 6
James & Co., George—Soles, Taps, Heels, etc..... 45	S. E. I. Co.—Voltmeters & Ammeters.. 45
Jeffrey Mfg. Co.—Detachable Chain Belting..... 45	Samson Cordage Works—Cords of all kinds..... 38
Jenkins Bros.—Packings..... 25, 31	Sanborn & Sons, Geo. H.—Paper Cutting Machinery, etc..... 47
Kelsey & Co.—Printing Presses..... 6	Savage Repeating Arms Co.—Rifles... 48
Keystone Mfg. Co.—Agricultural Implements..... 26	Schamandian, D..... —
Kilbourne & Jacobs Mfg. Co.—Wheelbarrows, Road Scrapers, etc..... 1	Schollhorn Co., Wm.—Shears and Scissors..... 40
Lefel, Jas. & Co.—Water Wheels and Steam Engines..... 16	Schrader's Son, A.—Diving Apparatus. 46
Lidgerwood Mfg. Co.—Hoisting Engines 31	Shultz Belting Co.—Rawhide Belting and Lace Leather..... 44
Marston & Co., J. M.—Foot and Hand Power Saws..... 31	Silver Lake Co.—Braided Cordage..... 39
Martin & Co., W. E.—Shoe Dressing... 41	Simonds Mfg. Co.—Saws..... 31
Mast, Foos & Co.—Wind Mills, Lawn Mowers, Force Pumps, etc..... 4	Smith & Co., H. D.—Carriage Hardware. 3
McCammon Piano Co..... 42	Stallman, F. A.—Dresser Trunks.... 45
Moline Plow Co.—Plows, Harrows, Cultivators, Rakes, etc..... 29	Standard Hammock Mills..... 46
Monarch Cycle Co.—Bicycles..... 32	Standard Tool Co.—Twist Drills, etc... 40
Mooney & Sons, W. W.—Tanners and Curriers..... 21	Stanley Works, The—Brackets..... 21
Morris European and American Express Co..... —	Standard Bicycle Mfg. Co..... 32
Moss, Geo. A.—Shoe Dressing for Ladies and Children..... 42	Star Drilling Machine Co.—Oil, Gas, Water and Well Drilling Machines. 4
National Meter Co.—Water Meters.... 19	St. Joseph Pump Mfg. Co.—Water Elevator..... 7
National Starch Mfg. Co.—Maizena.... 29	Stietjes & Co., F.—Importers..... 46
New Jersey Paint Works—Copper Paint, etc..... 23	Stubbs' Mercantile Agency..... 45
New Process Twist Drill Co..... 40	Sturtevant Co., B. F.—Pressure Blowers 47
New York City Peanut Roaster Works 46	Sweinhart Co., V. H.—Combination Locks..... 37
Nicholson File Co.—Files..... 21	Talbot & Co., W. E.—Brick Machinery 46
Norman & Evans—Steam Merry-go-rounds..... 46	Tanite Co., The—Emery Wheels, Whetstones, etc..... 48
Northampton Cycle Co..... 35	Tarr, James H.—Copper Paint..... 7
Onken Co., Oscar—Triplicate Mirrors.. 42	Thompson, A. R.—Tuyere Irons..... 46
Osborne & Co., C. S.—Saddle and Harness Tools..... 46	Thompson Diphtheria Cure Co..... 41
Parke & Co., John Y.—Bicycle Brake... 37	Thomson Meter Co.—Water Meters... 48
Parkhurst Bros. & Co.—Elevators..... 43	Thresher Electric Co.—Electrical Machinery..... 15
Partrick & Carter Co.—Electrical Supplies..... 44	Tubular Rivet & Stud Co..... 47
Pelton Water Wheel Co..... 2	Tucker & Dorsey Mfg. Co.—Alarm Money Drawer..... 42
Peoria Rubber & Mfg. Co.—Bicycles... 35	Union Sand Paper & Emery Wheel Co.. 38
Peru Electric Mfg. Co.—Porcelain Tubes and Carbon Batteries..... 42	U. S. Buggy & Cart Co.—Wagons and Carriages..... —
Philadelphia Novelty Mfg. Co.—Hardware Novelties..... 4	U. S. Playing Card Co..... 7

TO AMERICAN MANUFACTURERS.

THE AMERICAN EXPORTER was established in 1877 for the express purpose of developing a foreign demand for American manufactures, by calling the attention of the leading foreign importers and consumers to the unrivaled facilities in this country for supplying their wants.

Its policy, as then announced, has never been changed.

It is published monthly, in separate English and Spanish editions, and is dispatched direct by mail to the leading buyers of foreign goods in every country outside of the United States.

It is absolutely free and independent of any and all other existing export agencies. Its mission is to originate trade, and not to execute orders, which is properly the function of the commission merchant.

It affords equal facilities for, and does equal justice to, all its advertisers.

It does not take goods in exchange for advertising space.

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We desire it distinctly understood by our customers and those who contemplate making use of our publications, THE AMERICAN EXPORTER and EL EXPORTADOR AMERICANO, that space in these journals for advertising purposes is sold only upon the merits of the publications—for that purpose. For this reason, no advertising solicitor or agency has any right, or authority, to agree to perform any special service whatever to obtain orders for advertising.

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THE JOHN C. COCHRAN CO.

AMERICAN SECURITIES GOOD INVESTMENTS.

DISCUSSIONS of political or financial questions have not been considered within the scope of this publication. The importance of recent events, however, seems to make a departure from this rule advisable.

The discussions of monetary questions in the United States for the past 20 years have had world-wide interest, and have made an indelible impress upon the direction and impetus of modern enterprise. The sagacious financiers of Europe have doubted the ability of a mixed population, such as exists in the United States, absolutely free to declare and carry out any policy of public finance deemed expedient, to hold in restraint ignorance, corruption and dishonesty sufficiently to permit the Republic to manage its monetary system in a way to entitle it to the first rank in the credits of the world. When provision was made for the resumption of specie payments in 1875, which meant gold payments, as there was no other specie at that time, the financial world gave to the United States the highest praise and ranked its credit equal with the best. The impetus given to American enterprise by the command of the surplus capital of the world, to which the credit of the Government entitled its people, carried development of industries far beyond the period when causes sure to bring about a reaction began to appear. The "Greenback Craze," so called in 1873-76, was a demand for continued and enlarged issues of United States notes such as were issued during the Civil War. To stop the issue, reduce the amount outstanding and bring this form of currency, which in 1864 was worth \$0.492 per dollar in gold, to par with gold by the first of January, 1879, was a task well calculated thoroughly to test the honor of all the people. More than this was done. What the people of the United States accomplished is fully demonstrated by the following table:

Year ending June 30.	Debt bearing no interest.	Interest bearing debt.	Debt on which interest had ceased.	Outstanding principal.	Cash in Treasury.	Debt per capita.	Interest per capita.
1869.....	\$421,131,510	\$2,162,060,522	\$5,260,181	\$2,588,452,213	\$155,680,310	\$64.43	\$3.32
1879.....	410,835,741	1,797,643,760	37,015,630	2,245,495,072	249,080,167	40.85	1.71
1895.....	958,197,332	716,202,060	1,721,590	1,676,120,963	774,448,017	12.90	.42

During the 10 years from 1869 to 1879 United States currency notes were brought to par with gold, the outstanding principal of its debt was decreased by 13.2 per cent., its per capita debt was decreased by 36.6 per cent. and its per capita interest charge was decreased by 48.5 per cent. This was not all. Every obligation, public or private, and the valuation of all property was raised from its quoted price in a depreciated currency to a gold valuation.

In 1878 the "Greenback Craze" was revived, taking the form of a demand for a larger use of silver. A law was enacted requiring the monthly purchase of sufficient silver to coin 2,000,000 silver dollars per month at the legal ratio to gold of 16 to 1. These dollars were issued by the Government at their nominal value and made full legal tender the same as the United States notes. Having paid them out in discharge of obligations rated at par with gold, a moral obligation was created on the part of the Government to maintain these silver dollars on a parity with gold. No such obligation was expressed in the law for the reason that those who enacted the law believed its operation would cause silver to appreciate until the commercial and the legal ratio would be at a parity. Instead of appreciating, silver continued to decline.

In 1890 the silver-coinage law of 1878 was repealed and a law was enacted requiring the monthly purchase of 4,500,000 ounces of silver at market value, which was a gold value, and issuing therefor Treasury notes, which were made legal tender. One paragraph of this law states that it is the declared policy of the United States to maintain all of its issues, whether of silver or paper at par with gold. The purpose of this law was to inflate the currency, the "Greenback Craze" still surviving, and to make an effort to appreciate the value of silver to par with gold by withdrawing from the markets of the world the entire American product. Those who enacted that law believed such a result would follow its operation. The Government bought the silver at its gold valuation and issued its notes for the same. It was therefore morally and legally bound to redeem those notes in gold. Instead of appreciating, silver con-

tinued to decline. In 1893 the purchasing provision of the silver-buying law of 1890 was repealed, since which time no further monetary legislation has been enacted.

In 1896 the "Greenback Craze" again took possession of a large number of persons who demanded "the free and unlimited coinage of silver at the legal ratio of 16 to 1, the dollars coined to be given full legal tender power." The Presidential nominee of the champions of this demand boldly declared their belief that under the operation of such a law silver would appreciate to par with gold. This belief, like the faith of those who had enacted the silver legislation of 1878 and 1890, satisfied the conscience of the silver advocates and enabled them to respect themselves as being honest men. This fact is important because it clearly shows that no political party in the United States favors repudiation, and that if the payment of debts, public or private, created on a gold basis should ever be made in a medium of less value, it will be the result of a mistaken belief, not of a dishonest intention.

Since the obligations of the United States, public and private, were brought to par with gold, in 1879, every obligation paid has been paid in gold or gold values. From 1869 to 1895 the outstanding principal of the National debt has been decreased by 35.2 per cent., the debt per capita has decreased 80 per cent., the annual interest charge per capita has decreased 90 per cent. No people in the world have given such evidence as this of their intention and ability to pay their debts in the letter and spirit of their obligation. The doubt created by the repeated revival of the "Greenback Craze" called in question the intention, not the ability, of the American people to pay their obligations in gold or its commercial equivalent. The first contest with the "Greenback Craze" resulted in prohibiting a further cancellation of United States notes, fixing the amount to be kept outstanding at \$346,000,000. The second contest resulted in the coinage of 422,000,000 silver dollars. The third contest resulted in the issue of \$155,000,000 in Treasury notes. The fourth contest, the Presidential campaign of 1896, just closed, has resulted in vetoing, by a decisive popular vote of the whole people, the proposal to authorize the free and unlimited coinage of silver at the ratio to gold of 16 to 1, and affirming the declaration that it is the policy of the people of the United States to maintain their monetary system on a gold basis of valuation, and to pay all of their obligations, public and private, in gold or its equivalent in value.

In THE AMERICAN EXPORTER for February, 1896, under the title, "What Is a Dollar?—The Question Answered," it was stated: "All public and private contracts expressed in the money of account, use \$1 as the unit of accounting, and the value of this unit since the act of February 12, 1873, is 25.8 grains, fineness 900 of gold; therefore all such public or private obligations are payable in gold at the rate of 25.8 grains, fineness 900, per dollar, or its equivalent in value, at the option of the creditor."

This statement has now been confirmed by a decisive popular vote of all the people who have elected a President to carry into effect a declaration of principles among which is the following:

"We favor all measures designed to maintain inviolable the obligations of the United States, and all our money, whether coin or paper, at the present standard."

Upon the evidence here submitted it is clear that foreign investors from this time forward have no reason to further question the intention or the ability of the United States, or of its people, to pay their obligations as contracted. From the period of the first "Greenback Craze" to date, there has been an increasing disposition on the part of foreigners to sell American securities, fearing that they might at some time be tendered payment in depreciated paper or silver. That fear can no longer exist in any rational mind. As a result of this distrust the market price of all American securities is below a true value—some of them are unnecessarily low. Present conditions favor investment in these securities. No safer or more profitable investments can be found than in American stocks, intelligently selected. The American people have demonstrated their ability to discuss and settle an abstruse monetary problem requiring the highest order of honesty and intelligence yet

developed in the human mind, and the settlement they have made is in strict accord with the judgment of the foremost financiers. They have demonstrated American financial honor to be as invincible as American courage, and are justly entitled to the highest credit rating known in the markets of the world.

AN UNEXPECTED RESULT OF THE TREATY BETWEEN CHINA AND JAPAN.

IN the treaty of peace between China and Japan it is stipulated that the Japanese shall be permitted to establish factories in the open ports of China. It is also stipulated in many of the commercial treaties between China and other countries that such countries shall enjoy all privileges granted to the most favored nation. By permitting the Japanese to establish factories in China, Japan became, in this respect, the most favored nation; but the favor is not exclusive. By virtue of the clause named in treaties with other nations the favor secured by Japan as a result of its war with China becomes a common heritage for all nations having commercial treaties with China, just as the treaty between Germany and Japan, reference to which is made on another page, will give other nations patent and trademark rights in Japan.

Previous to its recent treaty with Japan the Government of China reserved all manufacturing and mining rights for the mandarins. Li Hung Chang is said to own one of the largest cotton mills in the world. It is located at Shanghai. He is also interested in silk filatures and other industrial enterprises. His fortune is estimated at \$365,000,000, gold valuation. Chang Chin Tung, the Viceroy of the two Kiangs, his rival in influence and wealth, is also a large investor in factories. He owns immense cotton mills at Hankow and is building a railroad between Nanking and Peking, a distance of 1,407 miles.

It is clear that Chinamen will not permit foreigners to do all of their manufacturing, or to get control of their mining and transportation industries. "China for the Chinese" has been the policy of the Government for centuries. This policy will not be overturned by the admission of foreigners to commercial and industrial privileges. All that foreigners can do in a country so vast, with a population instinctively clannish, will be to furnish centres of individual education that will revolutionize the habits, standard of living and productive methods of all China. These centres will become the business capitals of a new life and world, the leaders in which, native and foreigner alike, will develop enormous undertakings that will rival similar enterprises anywhere in the world, but the foreign aggregate of which will never be able to dominate the domestic trade of China any more than foreign investments in America dominate the domestic trade of the United States.

Foreign manufacturers in China will find it easier and far more profitable to dominate China's export trade than its domestic trade. The supply of labor in China is larger and cheaper than that of any other nation in the world, and it is a kind of labor with which satisfactory results can be obtained. Ten cents per day of 14 hours, gold value, is now a fair average. This is 50 per cent. lower than wages in Japan. The commercial value of this difference in wages, utilized by native and foreign enterprise stimulated by the new measure of freedom for industry imposed upon China by victorious Japan, will cause China to become the basis of a commercial invasion of Japan that will hold its advancement in check, and prevent it from realizing its ambitious dreams of gaining commercial supremacy in the Far East.

Domestic trade is measured by domestic earnings. Forty millions in Japan, earning 100 per cent. more per capita than 400,000,000 in China, can increase their earning capacity only in relation to the slow advance that will occur in the larger empire. Under freer commercial conditions the competition of Chinese with Japanese labor, through the importation of Chinese products into Japan, will hold the advancement of Japan in check and prevent it from becoming a strong competitor with American enterprise. Instead of a Japanese commercial invasion of America, Americans will utilize China as a basis of operations, and with the aid of cheap

Chinese labor will make a commercial invasion of Japan. The trend of events in this direction is shown by the American enterprises already taking root in that manufacturers' paradise, China, where cheap raw material, cheap labor and cheap transportation are found at values that underbid the world. The American Trading Company, of New York, and Jardine Matheson & Co. have erected cotton mills to the value of 1,000,000 taels at Shanghai, and various other factories are in process there. The contest of the nations for supremacy in the arts of peace may reach a decisive issue with China for its base of supplies. One thing is certain—the industrial force that will raise the standard of living and the wage earnings of China's 400,000,000 will improve the industrial conditions of labor in all nations. The latent economic forces of the Flowery Kingdom thus stimulated into activity may become controlling powers in the commerce of the world.

GOOD POINTS FOR AMERICAN MANUFACTURERS.

IN canvassing reasons for the success of American manufacturers it has been pointed out that one item is *superior packing*. Strong cases that insure delivery without damages. Greater quantity per cubic foot than is given by English and German packers. The practice of putting up uniform trade packages that can be bought and sold in the case in which they are imported and cases containing a suitable number of articles for sale to retail shopkeepers as a case lot. The use of specially prepared pitch paper for case lining which is as effectual as metal for preserving goods, and is lighter and more convenient. In boxing small goods it is conceded that the United States manufacturers excel and beat the British.

INTERNATIONAL COMPETITION IN BATTLESHIP BUILDING.

UNEXPECTED results from the war between China and Japan continue to come to the surface and take part in the grand movements that shape the course of world history. An individual, guided by no desire other than the promotion of his own welfare, through making useful discoveries or inventions, organizing large manufacturing, mining or transportation undertakings, contributes to the welfare of many others, and may make the State, the nation in which he lives, and the whole world beyond his beneficiary. The same truth holds good in the affairs of nations. Japan has no thought of creating a new navy that will serve any purpose other than its national welfare. After due consideration and preparation the work of constructing this new navy is about to be actively entered upon. Not being able to build for itself the required ships, the problem was presented of how to secure them to best advantage from foreign builders. Buyers of complete navies are not in the market every day, and builders able to construct navies are not numerous. It is fair to presume that all first-class builders can honestly claim some point of distinctive superiority for their work. Ever since their war closed the best minds in Japan's Navy Department have been occupied with the solution of questions that would determine what kind of ships they should have, armor and equipment, and where the best could be obtained. At last this work has been completed, and the contracts are either made or about ready to be closed.

The Cramp Ship and Engine Company, of Philadelphia, Pa., and the Union Iron Works, of San Francisco, Cal., U. S. A., each secure a contract for one cruiser.

Armstrong, the English shipbuilder, is to construct two first-class battleships and one armored cruiser.

Yarrow, also an English shipbuilder, is to construct five 150-ton, 24-knot torpedo boats and several torpedo destroyers.

Normann & Co., of Havre, the leading shipbuilders of France, are to construct five 150-ton, 24-knot torpedo boats.

A firm of German shipbuilders are to construct five 150-ton, 24-knot torpedo boats.

All of these vessels are to be finished in from 18 months to two

years, and comprise all that it is the intention of the Imperial Government to contract for at present. If the present comprehensive plans of the Mikado for the generation of a stupendous navy are followed, however, there will be a large amount of new construction necessary within the next few years.

In distributing these sample orders among the foremost shipbuilders of the leading naval powers of the world the Japanese Government has indirectly caused the greatest international contest in battleship building that has ever occurred. The successful contestant will not only win the prize of a large portion of subsequent orders from Japan, but will be sought by all buyers of war and commercial navies who find it necessary to supply their wants from shipyards other than their own. More than this, the successful contestant will demonstrate his ability to supply his own government with the best navy in the world. Such a prize is worthy of the best efforts that each of these powerful competitors can put forth.

In *THE AMERICAN EXPORTER* for October, 1895, the question was discussed, "Can Japan Acquire Naval Supremacy in the Orient?" It is there stated: "If Japan is seriously determined to gain and retain naval supremacy in the Orient its ships must be American-made.

There is about a ship, more tangible than in the case of any other machinery, a spirit of performance that seems to be breathed into it by those who create it. This spirit predestines the good ship to victory. The Japanese may be called upon to grapple the Russian Bear. Russian ships are clad with American-made armor. Will it not be a comfort to Japanese sailors to know that their ships are clad as well as those of the Russians?" That article closes with the following suggestion: "When the contracts are signed for the new Japanese warships the Chinese will know exactly what they must do to overreach them. Japan cannot maintain naval supremacy in the Orient without American-made warships."

The incidence of this initial order is among the unexpected results of the war between China and Japan, among which, and not of the least importance, is the stimulus given to international competition in shipbuilding.

A NEW WORLD.

IT is quite impossible for those now living to realize the sensation caused throughout Europe by the announcement of the discovery in 1492 of a New World, as the American hemisphere was then called. Recently a journey around the world has become comparatively a common, everyday affair, attended with little risk, a moderate expense, and may be easily accomplished within the predetermined limits of a not very long period of time. The number of travellers who have made the circuit of the world—some of them have done it several times—and the latter-day means of communication between all nations tend to cause people to think they know all about the world, and that no new worlds remain to be discovered.

In a sense this may be true, but practically a new world is about to be opened to modern settlement and enterprise by railroad construction in Russia. Who knows how large the Russian Empire really is? The United States, including Alaska, and all of Europe, except Russia, lack 308,000 square miles of being large enough to cover Siberia alone. It is 7,400 miles from the Eastern sea to St. Petersburg. Such tremendous distances make the transportation problem one of the highest importance to the Russian Government. The small systems of the little countries of Europe furnish no guiding points for its solution. The United States is the only country in which great distances, presenting for solution all possible engineering problems, have been dealt with. Recognizing this fact, at the express command of the Czar, Prince Hilkoﬀ, Russian Minister of Railway, has recently visited the United States for the purpose of inspecting its railroad system. As a preparation for this work he travelled 4,000 miles, from the present terminus of the great Trans-

Siberian Railway to Vladivostok, that he might know personally just what kind of a country Eastern Siberia is.

Siberia is now the fourth gold-producing country in the world, and yet it has no modern machinery. All the gold is washed out in the most primitive way. The history of California will be here repeated. The first rush was for gold. As the population of the country grew its agricultural interests developed; then came the era of railroad building, the upgrowing of permanent cities and general industrial interests. The tides of emigration that have so long been running westward from Europe to America may be turned eastward to Siberia, where there is ample room for all who may come.

Railroads and steamships are making the world available. Looking about over the world as it is known to-day it is easy to find ample room in it for all the human family, and to see that the productivity of nature is equal to the giving of abundance to each. This ample provision reduces the problem of securing a comfortable living for all to one of industry and transportation.

AMERICAN LOCOMOTIVES FOR CHINA—THE MEANING OF THE MOVEMENT.

THE simultaneous presence in the United States of Prince Hilkoﬀ, Russian Minister of Railways, by direct command of the Czar, and of Yen Nien, a special commissioner of the Emperor of China, for the purpose of inspecting the railroad system of the United States may be only a coincidence, and it may have a related meaning hidden in the mysteries of diplomacy. This observation will apply with equal appropriateness to the recent purchases of American locomotives and of a plant for building such locomotives in Russia, for the Russian railroad system, followed immediately by the purchase of American locomotives for the railway from Tientsin to Peking in China.

The advantages of uniformity in the railroad systems of the several States and of Canada are so pronounced it is but natural that empires like Russia and China, covering vast territories, should learn from us a lesson of high value in the development of their modern transportation systems. This would be true if each should confine the application of the lesson to its own great territory. When the governments of two such empires joining each other are seen to be moving simultaneously in the same direction for the accomplishment of the same object, and when it is known that the railroad systems of Eastern Siberia in Russia and of Mongolia and Western Manchuria in China are being mapped out with reference to each other and constructed with regard to interchangeability of traffic, which may be for the commodities of commerce or for the munitions and troops of war, the possibilities of gigantic combinations for the control of the commerce of the Far East in time of peace, and of its political destinies in times of war, are seen to be nearing the state of actualities.

In the light of events growing out of the China-Japan war, the strained relations of European governments over the situation in Turkey and the suspicions European governments have generated in the minds of the Chinese through their policies of conquest the copying of the American railroad system and the simultaneous purchase of American locomotives by Russia and China have far more than an ordinary commercial significance. It means vast preparations for a development that may be always industrial if nations can be induced to keep the peace, or that may suddenly be turned to the uses of war should war come. It is a subtle, far-reaching protest against the manner in which European civilization has been dealing for centuries with peoples found to be inferior in the modern arts of commerce and war, who were called heathens. It means that whether the destinies of the Far East are to be blessed with peace or marred with war America will be its workshop for machinery, tools and the munitions of war. It means the end of civilization by force, the growth of civilization by amity and commerce.

FALSE PRETENSE.

THE German Government desiring to protect the interests of German cattle raisers and meat canners, at the expense of German workmen, has seen fit to prohibit the importation of American canned beef by the adoption of rules for inspection that are not designed for the protection of health, but to render importation impossible. The right of the German Government to protect its agricultural interests cannot be questioned, but it has no right to do so in a way calculated to deceive its artisans and to discredit the products of another nation in the estimation of its customers. The idea that governments are amenable to moral law is the generative force of civilization. The proposition that governments, as well as individuals, have no right to be dishonest will receive a response of approval from all right-thinking persons, and will be readily admitted by those in authority in every civilized country. But governments are not honest that shape their political policies for the attainment of ulterior objects under cover of false pretenses given to their own people or to the world. Protests against such procedures are of no avail, because the moral sense is lacking in the offender to which appeal might be successfully made. Robbers are not deterred from plundering by quotations from the moral law, but by the presence of superior force, the fear of personal injury and the certainty of punishment. Protests made to the German Government in this case will have little value. Having determined to do the thing, and to give a false reason for doing it, that government will hardly be restrained from doing it by being told its reason is not true. Some means must be found that appeals not to a defective moral sense, but to a tangible and sensitive commercial interest. When such an interest is selected for punishment something like a response of repentance may be secured.

Knowing the German pretense to be false, buyers of canned meats in other countries will be little influenced by it. Those who use the goods will know the truth, and official Germany will be discredited before the world.

AMERICAN CUT AND WIRE NAILS EXPORTS.

THE growth of exports of cut and wire nails for the past four years has been very rapid. The countries with which this trade has increased most largely are Japan, China and Australia. This growth has been at the expense of German manufacturers, who were leaders in handling the nail trade of those countries until within a comparatively short time.

Government statistics show exports of cut and wire nails as follows:

	Cut, Pounds.	Wire, Pounds.
1893.....	15,604,347	2,300,501
1896.....	20,730,260	8,631,927

It is the opinion of members of the trade that exports will continue to increase, as nails can now be produced in the United States as cheaply as in Europe.

THE RIGHT OF A MANUFACTURER TO HIS GOOD NAME.

THE suggestion made in THE AMERICAN EXPORTER for October, 1896, in discussing the subject of "Commercial Frauds," that a World Association of honest manufacturers and merchants of all nations should be formed for the correction of the evils set forth, has called out an article from an eminent American attorney, Mr. Arthur Stewart, which appears on another page and is commended to the careful attention of all readers. Writing under the title of "Commercial Frauds and Their Legal Suppression," Mr. Stewart not only shows the grievous wrong inflicted by counterfeiters upon the honest manufacturer, but also draws attention to the fact that the damage done by counterfeit goods amounts to a national calamity.

The coinage of a country's workshops, far more than the coinage of its mints, circulates in all the channels of international commerce, but the punishment of the counterfeiter of the coinage of the shop

is left to the initiative of the individual, while the Government, through all its ramifications and agencies, keeps tireless, sleepless watch over the coinage of its mints. The Government is jealous of the good name of its coins and is quick to punish any counterfeiter proven to be engaged in producing or circulating base imitations of them. It is no less the interest and duty of every manufacturer to be as jealous of the good name of his products and as quick to punish any counterfeiter proven to be engaged in producing or selling imitations of them. The welfare of the people as a whole would be as well served by certainty of the detection and punishment of counterfeiters of commodities as it is by the safeguarding of coins; in fact, more so.

This question of the protection of a manufacturer in his worldwide right to the exclusive use of his good name touches the interest of every manufacturer, importer and merchant, and back of them of every consumer. Has civilization reached a point of development at which the cause of one can be made the cause of all through an association that will demand protection in every market of the world?

EVASIONS OF THE BRITISH MERCHANDISE MARKS ACT.

IN its issue for October, 1896, *Ironmongery* calls attention to the disadvantages suffered by English manufacturers through evasions of the "Merchandise Marks Act." The peculiarity about the cases cited is that the evasions are all of English origin, done in England with goods sent to the Colonies. This is not exactly the kind of information expected in reply to the Colonial Secretary's inquiry, "Why foreign competition in British exports is operating to the disadvantage of British manufacturers?" It indicates, however, an evil within the reach of the English Government. May it be successfully dealt with.

AMERICAN ENTERPRISE IN CHINA.

THROUGH the co-operation of the American Consul-General, Mr. T. R. Jernigan, with Col. R. Jefferds, an American merchant, a permanent exhibition for American manufactures is being erected at Shanghai. We are informed that the building is of imposing dimensions, and will be made attractive with fountains, statuary and all suitable accessories designed to please and instruct sightseers. The whole world likes to get something for nothing. In this respect the Chinese are no exception to the rule. Recognizing the drawing force of the announcement "Admittance Free," the exhibition will be run on that plan, and all Chinamen will be given an opportunity to enjoy themselves and see what Americans offer to sell them.

As foreigners are always impressed by authority and financial responsibility, this exhibition will be greatly helped by the fact that the American Consular Service will occupy a large suite of offices in the building and that another portion of the structure will be used for the purposes of an American bank. A large administrative staff will be employed, whose special business it will be to keep close watch of every opportunity for American trade and American enterprise. In this way a valuable and a most effective combination of forces that make for national prestige and commerce has been made.

This exhibition, with all of its collateral purposes and provision of means for carrying out its object, has been well planned. That it will become a powerful centre for the upbuilding of American trade and enterprises in China is foreseen by the representatives of other countries, who are referring to it as a model which must be duplicated by them if they are to hold their own in international competition for the trade of the Orient.

This movement at Shanghai, the American Exposition at Peking (to which reference was made in THE AMERICAN EXPORTER for October) and the fact that Yen Nien, a special commissioner of the Emperor of China, is now in the United States studying American methods of manufacturing, transportation and municipal gov-

ernment are so many evidences that China is continually growing more receptive of American ideas and civilization than of the European. This is largely due to the fact, in dealing with Americans, Chinamen are entirely relieved from all suspicion that Americans will want to take possession of their country and govern them. All Chinamen instinctively have the feeling that such is the ulterior purpose of Europeans. Commerce thrives better on good will than fear. This is a basic reason why Americans will finally become supreme in the trade of the Orient.

FOREIGN MARKETS FOR AMERICAN WOODS.

THE exports of American wood products, finished and unfinished, for the year ending June 30, 1896, amounted in value to \$20,000,000. England and Canada were the largest customers. Germany is a large consumer of American hard woods, but until recently the trade of that country has been supplied through English markets.

American walnut and Southern hard pine are in demand and all kinds of hard wood are feeling the benefit of being wanted in Europe. Many industries are devoted to producing dimension woods for various purposes that are shipped to Europe to be finished. This method of dividing the work, saving freights and giving to the foreign manufacturer only what he can use to best advantage and in the best shape for his handling is rapidly coming into use with the manufacturers of carriages, furniture, cars, barrels, boxes, trunks, agricultural implements, tool handles, etc. The entire product of some American dimension manufacturers for these lines is exported, none of it being used in the United States.

In the Southern States there are large tracts of valuable hardwood timber standing on lands that may be bought from present owners, who have no capital with which to handle the woods for considerably less than its stumpage value. This being the case it is probable that the American production of dimension woods for European manufacturers will continue to increase.

FOREIGN PATENT AND TRADEMARK RIGHTS IN JAPAN.

SOME months ago, in writing upon the industrial development of Japan, reference was made to the fact that as the Japanese of to-day are imitators, rather than inventors, the country was placing itself at a disadvantage by not giving foreign inventors the same protection for their right to their inventions that was given to them in their own countries. It was pointed out that the failure of the Japanese to protect the foreign inventor would prevent those interested in patented articles from sending them to Japan, and would deprive the people of that empire of the development of many undertakings that are based on patent protection. Having expressed these views, it is a gratification to receive the following letter from one of the leading, if not the leading, lawyer of Japan, who has given much thought to the progressive improvement of its industrial conditions:

55 ZARMOKUCHO AZABU, TOKIO, }
October 9, 1896.

Editor of THE AMERICAN EXPORTER:

DEAR SIR.—I beg to inform you that there is a great probability that foreign inventions, designs, trademarks and copyrights will be allowed to be registered in the Japanese Office in the near future, when the Japan German treaty is ratified, other nations following her suit by virtue of the "most-favored nation clause."

This is written to you, it being thought that you may be interested to know it. I take this opportunity to inform you that my telegraphic address—"Nipposho"—has been registered at the Central Telegraph Office in Tokio.

Yours faithfully, R. MASUJIMA.

This information will be welcome news to many American inventors, who will be glad to serve the Japanese people on the same terms they do their own. By securing their co-operation the Japanese can go far toward making good their claim to the title of "the Yankees of the Orient."

—In the Pabst brewery at Milwaukee is a machine which corks, wires and caps 16,200 bottles a day automatically.

American Shoes in Germany.

THE State Department publishes an interesting report by Consul-General Frank H. Mason on the market for American shoes in Germany. In it he says:

"The Berlin correspondent of an American press association has been at pains to telegraph home the substance of a recent article in *Der Schuhmarkt*, a trade paper published at Frankfurt, which attempts to contradict the statement made in a consular report from this office to the effect that there is in Germany a practicable market for certain kinds of American-made shoes. The assertion of *Der Schuhmarkt*, as summarized for the American press, is in substance that—

"No market exists in Germany for American boots and shoes, for many reasons. German machinery for the manufacture of boots and shoes is as perfect as the American machinery, and the shapes worn in America would not do here."

"The zeal with which this article has been circulated and its republication, with editorial comment thereon, in the press of both countries, reveal fully its motive and real value. The *Schuhmarkt* is, or aspires to be, the organ of the shoe manufacturing industry in Germany. It lives by the patronage of that special class of manufacturers, and one of its duties is to warn off from their territory all intruders and protect their home market from foreign competition, especially American competition. Its editor probably realizes that American shoes, if once fairly introduced, would prove as difficult to dislodge from the German market as American sewing-machines, bicycles, typewriters and base-burning stoves have been, and for the same reason—they are better than can yet be made in this country.

"It is true, as he says, that German manufacturers have imported or copied most kinds of shoemaking machinery now in use in the United States. But they have not yet—notwithstanding all the progress that they have made during recent years—learned to organize their factory system and use the new machinery as skillfully as is done by the best American makers, and their product, in the opinion of experts whose judgment is conclusive, still lacks some of the substantial quality and the elegance of form and finish that characterize the best American made shoes, and this the show windows of any German shoe-store will clearly prove.

"That the better class of customers in this country—people who appreciate and demand the best that can be had of everything that pertains to dress and the comforts and luxury of life—have welcomed the introduction of American-made shoes is affirmed, not only by observation, but by the testimony of numerous dealers who are practically familiar with the trade.

"A demand for American-made shoes exists and will continue to exist until the German manufacturers fully attain the high standard of excellence, combined with cheapness, that has been reached by the best makers in the United States. That they will eventually do this is more than probable. Not only do they now use American shoe machinery, either imported or copied from American models, including the lasts and forms which the *Schuhmarkt* insists are so impossible for German feet, but there is hardly an enterprising shoe manufacturer in this country who has not in hand a line of samples of American-made shoes for his own information and the emulation of his workmen. There is now in construction in Württemberg a new factory for the special manufacture of the 'Goodyear welt' and other standard types of American shoes. There is, moreover, a considerable and steadily growing import of ready-made shoes into Germany from Italy and Austria-Hungary.

"Whether the more or less permanent opportunity which now exists in this country shall be utilized or not will depend entirely upon the enterprise, energy and intelligence of American shoe manufacturers in organizing to work this field, as the Germans have organized in so many branches of their industries, and are working to its full value every opportunity for export trade in England, South and Central America, Asia, Africa, and notably in the United States."

A Growing Export Trade.

BETTER times are on the way, if a lively export trade means anything. The latest figures show a most gratifying increase over last year.

The exportations of breadstuffs for the nine months ended September 30 of the present year were \$115,424,088, as against \$85,325,340 for the corresponding period of last year; for provisions the figures are \$120,987,047, as against \$112,450,923; for domestic merchandise, \$650,931,318, as against \$546,424,359. The gain in the exports of mineral oils for the last nine months over the corresponding period of last year was about \$7,130,000. The comparative figures as to exports for the single month of September are as follows:

	1896.	1895.	Increase.
Breadstuffs.....	\$17,054,220	\$11,130,547	\$5,923,673
Provisions.....	13,298,828	11,319,135	1,979,693
Mineral oils.....	5,491,190	4,677,572	813,618
Cotton.....	16,849,163	4,925,015	11,924,148

This sufficiently accounts for the extraordinary flow of gold this way. Already the net balance in the Treasury is \$125,000. The short supply of wheat abroad is making a brisk market for our breadstuffs.

—One of the most annoying things hitherto about trade with Mexico was the intricate system of State tariffs. Not only were articles required to pay the Federal tariff at the frontier, but each State made its own tariff laws on pretty much any basis it saw fit. Now these interstate tariffs have all been abolished the past month, and only the Federal tariff is collected at the point of entry into Mexico.

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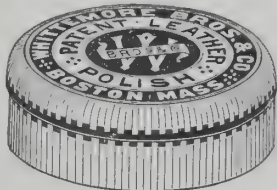
for ladies' and misses' shoes, is far superior to all others, as it blacks, polishes, softens and preserves the leather. Bottles hold about double the usual quantity. Price per gross, \$16.00; discount 10 per cent.

PATENT LEATHER POLISH.

The only article that will produce a quick, brilliant and waterproof luster without injury to the leather. The only brilliant polish that does not crack patent leather. The professional bootblacks of the United States use far more of this article than all other makes combined, because it polishes quicker and easier, and requires less of it to do the work. The polish is also more brilliant and lasting.

Large size, per gross, \$9.00; discount 10 per cent.

Small size, per gross, \$6.00; discount 10 per cent.



OUR "STAR" COMBINATION



package contains a 2-oz. bottle of russet leather cleaner and a small decorated tin box of russet leather polishing paste. The cleaner removes the dirt and stains, and the paste adds a bright, durable and waterproof polish.

Price per gross, \$10.00; discount 10 per cent.

THE "STAR" CLEANER

in bottles without cartons and without the box of paste, price per gross, \$6.00; discount 10 per cent.

RUSSET LEATHER POLISH

for giving russet, red and all fancy colored shoes a brilliant, durable and waterproof polish. A thin coating of this polishing paste will produce an elegant and lasting polish. Try it once and you will never be satisfied with any other polish. Price per gross,

in our large size decorated tin boxes, \$9.00; discount 10 per cent. We have a smaller size of this polishing paste put up in decorated tin boxes at \$6.00 per gross; disc. 10 per cent.

FRENCH GLOSS.

Warranted fully equal to the best \$9.00 black dress shoes in the market (and put up handsomer). With handsome three-color lithographed cartons and wood caps over corks. Price per gross, \$8.00; discount 10 per cent.

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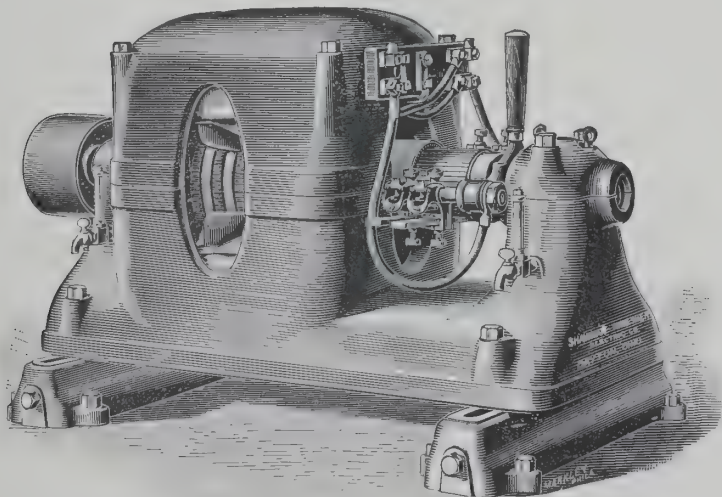
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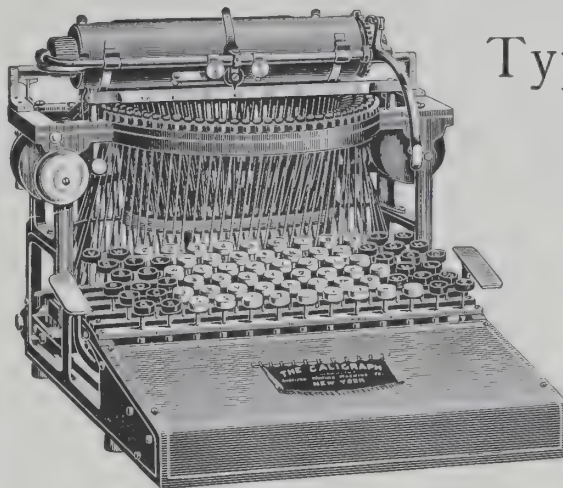
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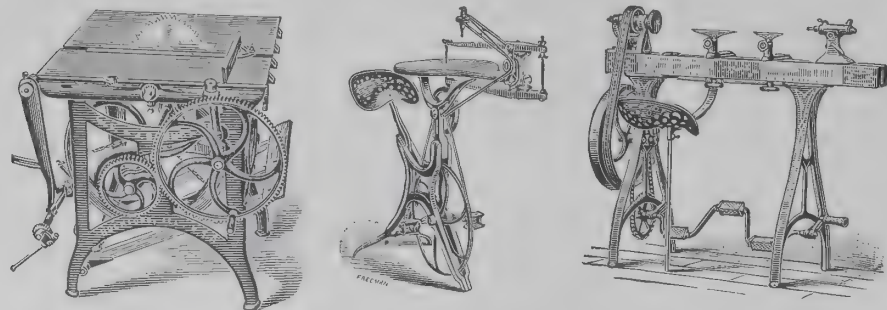
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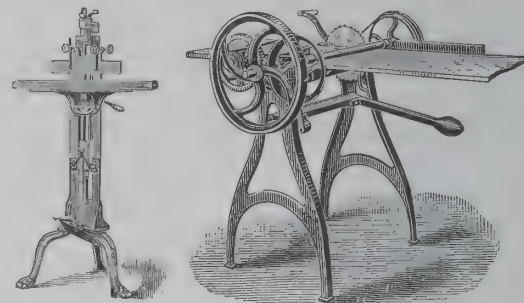
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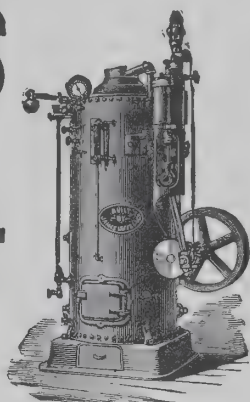
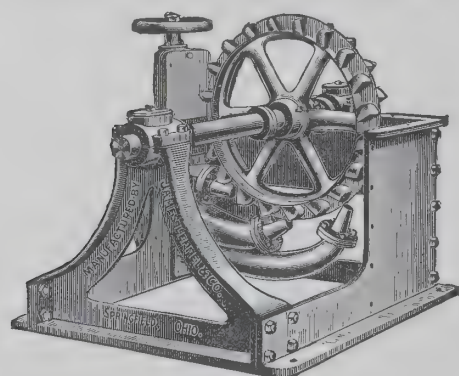
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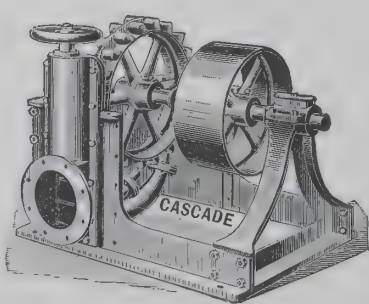
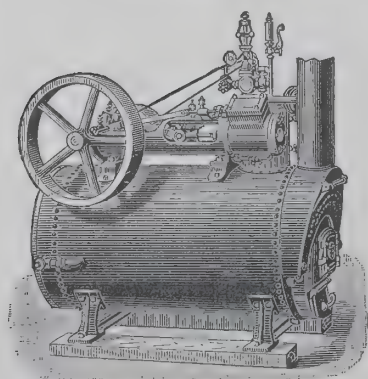
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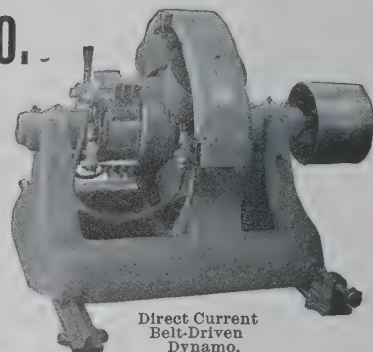
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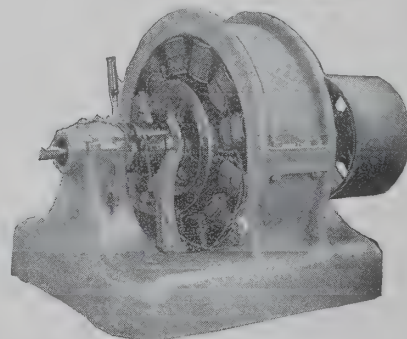
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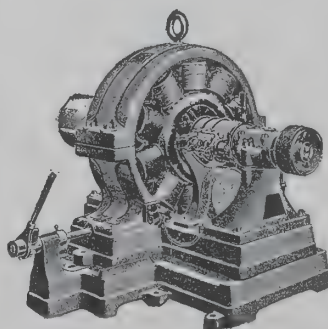
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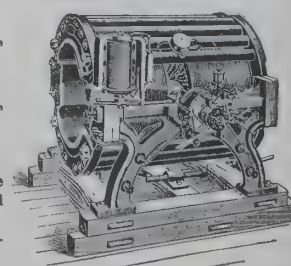
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Modern Tools and Engineering.

IF engineers of the present day realized how much their labors and anxieties have been lightened by better machine tools, better oils and better methods of lubrication than their forefathers had we think they would vote a set of resolutions to the persevering men who introduced these things. We said better machine tools, and this applies directly to engineering, for the lathes we had 50 years ago were but ill adapted to their work, while the methods in use in those days of preparing work to be turned on them would not be tolerated now. Such a thing as a centre drill was unknown in the best and largest machine shops of the country, and as for countersinking a centred shaft it was never done, except in the case of very heavy shafts, and then more to afford a bearing for the lathe centre than from any idea of its great importance in accurate work. Even the lathe centre itself was but little considered; it was, more often than otherwise, a stubbed, any angled plug in the lathe spindle, with a point upon it that had seen as hard usage as a boy's peg top, and it was never turned up true unless there was absolutely no getting along with it. When work was taken out of the centres before it was finished, for any purpose, wise men chalked the centre and the work so that they could be sure that the job went in at the same place it came out of.

These practices will sound queerly to latter day machinists who have tools of precision that require no such precautions, but we have only told a plain tale of the way lathe-work had to be done half a century ago, not in a cross-roads country blacksmith shop, but in this city of New York, in the largest shops, with the best tools extant at that time.

As may be imagined, the bearings turned in such lathes and by such methods were polygonal, not round, and if they were concentric, where two bearings were on one shaft, it was because the lathe man was smart enough not to turn the shaft end for end in the lathe, and did not use a steady rest unless he was compelled to.

Fitting a brass box to a polygonal journal is an impossibility, as fitting is now understood, and it was fortunate for the engineers of the period that the piston-speeds were slow and the pressures low, otherwise they would have had much more trouble than they did have with hot bearings. Imagine a modern torpedo-boat or high-speed yacht, with engines fitted up as we were compelled to fit them 50 years ago, driven by high pressure steam! Such an engine would not have run half an hour, if, indeed, it stayed in the boat.

Modern machine tools are instruments of precision in all senses of the word, and work turned in them by skilled lathesmen is practically round in itself, but approximate rotundity, or truth, will not answer for the work that steam-engines are called upon to do in these days of high-piston speeds, and the best engine builders use grinding-machines where practicable, which make absolutely straight cylindrical bearings.

Grinding, as practiced 50 years ago, consisted in smearing the surface of the pin to be ground with flour-emery and inserting it into the d tail it had to fit tightly. The pin was then rotated back and forth until the highest parts were ground off and it would enter and fit the hole without shaking in it. This was a crude, rough process and in no wise like modern grinding. The pin or shaft to be made true is put between dead centres and revolved upon its own centres, which are carefully and accurately made in the first instance, then an emery wheel of very fine grade traverses back and forth over the surface just skinning the highest parts until the whole is a true surface. This process reveals the fact that the best modern lathes and lathesmen cannot turn a bearing absolutely true, for if a piece is smoked so as to leave the surface black and then put in the grinding lathe, the first cut over reveals the fact that it is very far from being true. If this is correct of the best modern lathes and with work properly centred, we may imagine what the surfaces produced in old-time lathes were when there were no centres, as we may say. Three and four hundred revolutions per minute for engines exerting 2,500 to 3,000 horse-power per hour have been attained recently, while in the case of smaller high-powered engines, 600 revolutions, and even more, have been made by modern steam engines. For such rotative speeds the utmost accuracy of machine work that is possible must be present, and modern machine tools have a large share in producing it.—*Engineer, New York.*

—That American talent is now fully able to turn out armor plate rapidly as well as turn it out good is shown by the fact that the Carnegie Company will have the armor for the two new battleships before they are ready to receive it.

Japan Orders Fast Cruisers.

THE Imperial Japanese government has concluded negotiations with the William Cramp & Sons' Ship and Engine Building Company, of Philadelphia, and the Union Iron Works, of San Francisco, for the building of two protected cruisers, which promise to surpass anything of their class. With the experiences of actual naval combat fresh in their minds, the Japanese have a thorough appreciation of what a war ship should be, and the contracts for their new cruisers were awarded only after mature deliberation and an exhaustive consideration of plans submitted by builders in England, France, Germany and the United States. The Japanese Commissioners, moreover, visited the establishments of all the contesting builders and made themselves thoroughly conversant with their respective facilities for turning out good work.

COMMERCE DESTROYERS.

The new Japanese ships will be commerce destroyers, and the contracts will call for a speed of $22\frac{1}{2}$ knots. Since the vessel, once in Japanese waters, will be brought into close and critical comparison with the cruisers of all the navies of the world, the builders will, undoubtedly, try to build ships that will carry off the honors, and thereby do credit to themselves and their flag. The extreme length over all is to be 405 feet 2 inches; length on the main load-water line, 396 feet; beam, 49 feet; normal draught, 17 feet $7\frac{1}{4}$ inches; displacement at normal draught, 4,760 tons.

POWERFUL ENGINES.

To drive these slender craft through the water engines of the vertical, inverted, triple expansion type will be used. Two in number, they will actuate twin screws, and will be placed in separate watertight compartments. They are expected to develop 15,500 horse power. Four double ended and four single ended steel boilers, constructed for a working pressure of 165 pounds per square inch, will occupy four watertight compartments. The total heating surface will be about 22,440 square feet, and the grate surface 792 square feet. The force draught system will consist of a blower for each fire room, the fire rooms being made air tight by air locks. Steel of superior quality is the material that will enter most largely into the construction of these cruisers. Where wood is used it will be rendered fireproof by an electric process of approved efficiency.

DOUBLE BOTTOMS THROUGHOUT.

After the manner of modern vessels, each cruiser will be a ship within a ship, having a double bottom, and a protective deck extending the entire length of the ship. The thickness of this deck will be doubled over the engines, boilers and magazines. A large number of watertight compartments will render the localizing and control of damage a comparatively easy matter.

The conning tower, located in the after part of the fore-castle deck, will be armored, and an armored tube will extend from it to the protective deck. Engine room telegraphs, steering telegraphs, speaking tubes and telephones will afford direct communication with all parts of the ship to the commanding mind in the conning tower. In addition to the propelling engines there will be at least 40 auxiliary engines. Each ship will have an electric plant that will supply a current to 500 incandescent lamps varying from 5 to 10 candle power, to 50 portable lamps and to two powerful search lights.

AMPLE VENTILATION.

Electricity will also provide for the perfect ventilation of the ships. Two motors will operate ventilating fans having an aggregate capacity of 20,000 cubic feet of fresh air per minute.

The captain's cabin will have two state rooms; the ward room will have quarters for 24 officers; the junior officers' quarters will provide for 15, and the warrant officers' mess room will accommodate 12.

The men will have swinging tables and benches, and all the other comforts usually supplied to the up-to-date enlisted man. The Japanese Government will furnish the ordnance and ordnance outfit, torpedoes and torpedo tubes. Each ship will carry two 8 inch rifles and ten 4.7-inch rapid fire guns, twelve 12-pounders, two 6-pounders and two $2\frac{1}{2}$ pounders in the military tops. Five torpedo tubes will be installed in each vessel.

THE NEW CRUISERS WILL COST NEARLY A MILLION AND A HALF EACH.

Mr. Charles H. Cramp returned to Philadelphia to-night, after spending two days in consultation with the naval attaché of the Japanese Legation relative to the construction by the Cramps of a warship for Japan.

"No contract has yet been signed," said Mr. Cramp, "and it may be

several days before we come to an agreement. The dimensions of the new cruiser which have so far been published are wrong. The price, you may rest assured, will not be made public by us. I can say, however, that the figure will be nearer \$1,500,000 than \$1,250,000, which has been published."—*New York Herald*, Nov. 9th.

American Iron and Metal Trade.

THERE is more animation in those lines which are free from the influence of combinations, since the low prices made in them by the fiercest competition are recognized as being close to bed rock. Confidence is undoubtedly growing apace, and is much stimulated by the rise in grain and the enormous export movement. We understand that ship room for grain has been engaged as far ahead as July. It is true that this is practically checking the export movement in the cruder forms of iron and steel. An inquiry for 1,000 tons of billets for immediate shipment to Germany brought out the fact that the only ocean tonnage to be had, as a favor, was 500 tons in the second half of December, a rate of 15s. 6d. being named.

It is reported that the German steel makers, becoming alarmed at the inroads of American sellers of steel products into their foreign markets, have agreed to make a heavy reduction on steel to German makers in all the competitive business. This applies particularly to wire products.

In connection with one of the large export transactions an interesting story is going the rounds. An Ohio wire nail company sold 50,000 kegs for export to Japan. The wire rods were made under a conversion arrangement, so that the 5,000 tons of billets furnished were claimed to be beyond the jurisdiction of the billet pool. This has caused dissatisfaction among members of the pool, to which a 5,000-ton block looks pretty big in these days. It is understood that the whole of the September shipments were only about 36,000 tons, and that the greater part of this quantity was sheet and tin plate bars. Sales, in addition, to about a like quantity were made.

Further evidences of past pressure to sell material keep cropping up. Thus it is estimated that close to 3,000 tons of ferromanganese have been exported in the past few weeks. The glut in the spelter market, too, has been relieved by heavy shipments to Europe from St. Louis, via New Orleans, the sales being estimated at 5,000 tons.

The battle-ship contracts for material have been placed. Carnegie gets all the shapes and the plates for two boats, while Bethlehem has taken the order for the plates for the ship to be built at San Francisco.

A report is current that the Spanish Government has placed an export duty of 60 cents a ton on iron ore, and that it applies also to Cuban exports. The fact could not be verified; indeed the Spanish Consul in this city knows of no such action. If true it would seriously hamper English, and to some extent German, producers, as to Spanish ore, and to a much less extent American works. It would, however, prove serious, so far as two Eastern works were concerned, if it applied also to Cuban exports. There has been a movement to impose 4½ pesetas on iron pyrites.—*Iron Age*.

During the week ending October 24th the Tennessee Coal, Iron and Railroad Company sold 10,000 tons of pig iron in good round orders, of which 4,000 tons were bought by parties in England, and will be exported via Brunswick, Ga. The price was as satisfactory as could have been gotten in this country for the same amount of iron at this time. Many inquiries from foreign buyers of pig iron are being received in the Birmingham district, and the prospects for a continuous exporting trade are very bright. This sale indicates the possibility of competition between our iron and that of England, not only in neutral markets but in England itself. We recognize the exceedingly dullness of the pig iron market here and the fact that the present conditions are not normal, but these considerations do not deprive the export of pig iron from this country of all its significance as a suggestion of what the future has in store for the American iron and steel industry.

The rails already shipped from this country to Japan were sold at prices lower than those of the English and other European manufacturers. The price of the first lot was reported in England to have been \$21.26 per ton. As the price of English rails, free on board for export, is now \$21.87, we suppose that the sale reported above was made at a price not higher than this. During the eight months ending with August, 33,807 tons of steel rails were exported from the United States.

The interest which European iron manufacturers are taking in the purchase of Alabama iron is again shown by a letter which the secretary of the Commercial Club here has received from Baer & Co., iron importers of Zurich, Switzerland, inquiring for prices on Alabama iron and steel. The letter speaks highly of the Alabama product, saying that it has been used at other points in Europe and was well liked. The belief is expressed also that on account of the low cost of the raw material Alabama can compete successfully with England and Germany. The Zurich firm says they are anxious to establish trade relations with ironmakers here.

THE WEBER GAS AND GASOLINE ENGINE COMPANY, of Kansas City, Mo., recently received in same mail orders for three of their engines; the first one of these opened was from the Kootenay Mining Company, Kaslo, British Columbia; the second was from Mr. Miguel Infante, Guanajuato, Mexico, and the third from the Clifford Plantation in Florida. Strange as it may seem all were for the same size engine, and coming as they did from points over 3,000 miles apart, this goes to show the wide market which exists for this engine.

"Made in Germany."—Foreign Competition.

"A COUNTRY SHOPKEEPER" writes: "A good deal has been written, but far more has been said, on the question of foreign competition; and now that the alarm has settled a bit, 'tis quite time for a paper like yours to take the matter up and see what there is in the subject. But before doing so it must be taken up with no preconceived notions that all English goods are the best, and English manufacturers the smartest men on earth; but with a desire to honestly deal with the questions on their merits by the Chamber of Commerce of the particular district or town affected, and see what is wrong, to give the foreigner such advantage, if any, that he possesses."

"Take files. Now files are principally made in Sheffield. Therefore, the fact that American files are being sold to ironmongers direct through the American company's agents, and in some cases through Sheffield factors, makes this purely a question for Sheffield to consider; and if any good is to be done, it can only be done by Sheffield men, as it is to their interest to settle it and place the industry on a satisfactory basis. Now, I have a fair knowledge of Sheffield—its factories and warehouses; and, speaking generally, a more dirty, dilapidated heap of ruins than some of the piles of buildings that are called file factories it is impossible to find. All orders are made up as required—with the result, delay; and as far as the shopkeeper is concerned, disappointment and disgust is caused. Now then, on the other hand—American files. Order from an agent, and you get 75 per cent., if not the whole of them, leaving the next day. Now, under what conditions are these files made? How is the raw material received and handled, from the time it comes into an American shop until it leaves in a package? The Sheffield Chamber of Commerce must find out. From my knowledge of a few American workshops, their internal equipment, management, and the exactitude of everything in detail, the Sheffielder has a good deal to learn. Now, he must not be above learning. I wish the Sheffielders to undertake, through their Chamber of Commerce, a thorough and official investigation of this and similar subjects before it is too late."

[Here is an indictment against Sheffield from a country ironmonger which ought to evoke some interesting and instructive replies. We shall be glad to publish the views of the trade on this statement, withholding any comments we may have to make till the subject has been further discussed.—*Ed. Ironmongery*.]

We, too, will await with interest the publication of the views of the English filemakers and the comments of the editor of *Ironmongery* on the subject of American competition in the file trade.—*Ed. AMERICAN EXPORTER*.

American Papermaking Machinery Going to England.

MEMBERS of the paper trade in this country have been watching with interest for the past two years the tendency of foreign papermakers to adopt the American process. Some months ago two large Fourdrinier paper-making machines were exported from this country to Norway and Sweden, and a few days ago an order for one of the largest machines ever made was placed with the Bagley & Sewall Company, of Watertown, N. Y., by a representative of the Daily Chronicle Company, of London.

This papermaking machine, which is expected to be ready for shipment next January, is believed to be the first paper machine of importance to go into England from any other country. It will weigh from 125 to 150 tons, and will be completely of American manufacture. The machine is to be 137 inches wide, and equipped with every modern device, including 30 large drying cylinders. It will be set up in the Daily Chronicle Paper Mill, at Sittingbourne, England, and the contract requires that it shall be ready for operation by the 1st of next April.

The two Fourdrinier paper machines which were sent to Scandinavia from Wilmington, Del., have, it is reported, given satisfaction to their purchasers, and they have helped to make the Scandinavian papermakers formidable competitors of the American papermakers in the British markets. English manufacturers have been buying wood pulp of Norway and Sweden for several years, but lately the Scandinavians have found it more profitable to turn the pulp into paper at home and export the finished product instead of the raw material.

The Scandinavian paper now meets the products of the American and the English mills in the London market on about even terms. These facts were gathered by a New York papermaking expert who recently completed an extensive tour through Norway and Sweden.

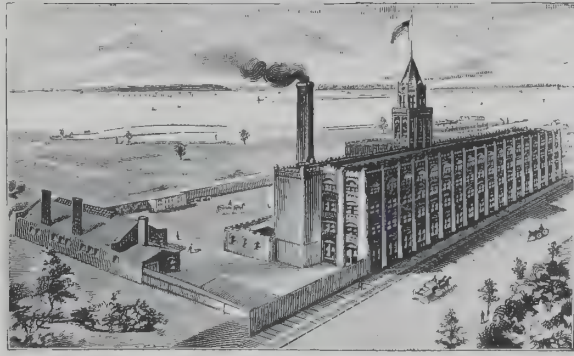
The exports of manufactured paper from this port during the week ended October 28th aggregated 37,222 packages, the value of which was \$11,891. Of this amount \$1,234 worth went to London, \$865 to Liverpool, \$628 to New Zealand, \$2,250 to Kingston, and \$1,250 to Mexican ports.

Large new pulp mills and dams are being constructed by the Glens Falls Paper Company at Cadyville, N. Y., and the Chateaugay Railroad will run a side track to the mills. The Chateaugay company now has 400 men in the Adirondack woods cutting timber for pulp wood.

THE Russian government is negotiating for the purchase of the machinery of the Wellman Steel Works at Chester. The price offered is \$86,175. The negotiations have been secretly pending for some weeks. The matter was taken into the court by reason of the fact that the concern has been in the hands of a receiver for three years past, and is still under the supervision of the court. The purchase includes the engines, the largest train of plate rolls in the world, cranes, pumps, and all necessary apparatus for putting the plant into immediate operation. There was no opposition on the part of the owners or bonded interest, as the price is more than ample.

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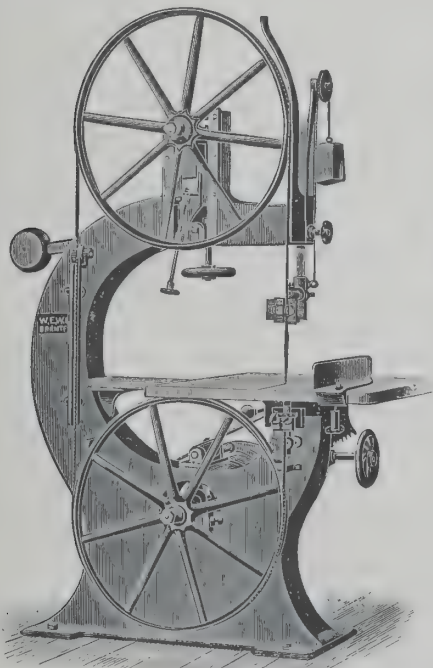
298 Broadway, New York, U. S. A.

[NOVEMBER, 1896.]

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BOSTON.

LONDON



No. 3.—36-inch Wheel. Weight, 2,000 lbs.

BAND RE-SAWS.

No. 5 Band Resaw.—48-inch wheels; saws 24 inches wide, 5 to 40 feet per minute. Resaw swings clear of machine when required. Weight, 4,500 lbs.

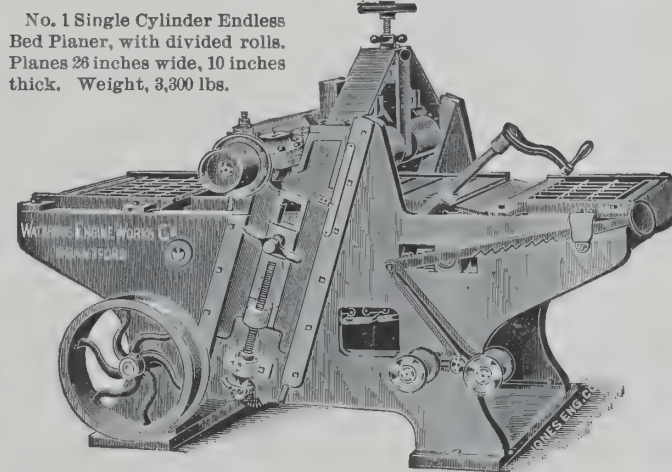
No. 6 Band Resaw.—48-inch wheels; takes saws to 3 inches; cuts 30 inches deep. Weight, 4,300 lbs.

No. 7 Band Resaw.—54-inch wheels; 4-inch saws; cuts 30 inches deep and to center of 10 inches. Weight, 5,300 lbs.

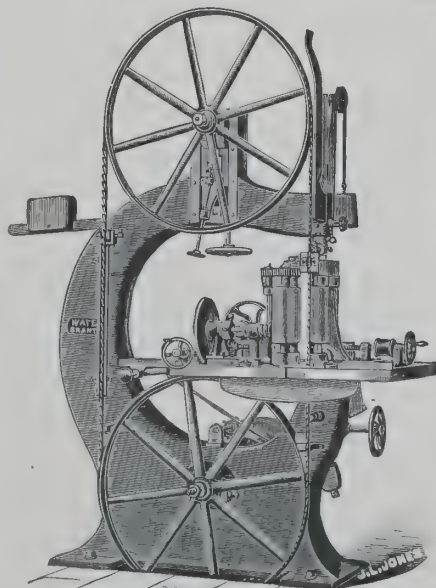
OTHER SIZES MANUFACTURED.

FULL LINE OF

Saw Mill Machinery.



No. 1 Single Cylinder Endless Bed Planer, with divided rolls. Planes 26 inches wide, 10 inches thick. Weight, 3,300 lbs.



No. 4.—40-inch Wheels and Removable Resaw. Weight 2,750 lbs.

Wood-Working MACHINERY.

No. 1 E. B. Planer. Weight, 3,300 lbs.; like cut.
No. 1 Double Cylinder E. B. Planer. Weight, 5,300 lbs.
No. 2 E. B. Planer. Weight, 2,600 lbs.
"Champion" Combined Planer, Matcher and Moulder.
Planes 24 inches wide up to 6 inches thick. Best all-around machine.

MANY OTHER STYLES AND SIZES,
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Long experience in the export trade is
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January, 1896, we moved into new premises, securing unsurpassed facilities for executing contracts promptly and satisfactorily.
Order direct or through your commission house, sending us copy of order.

Saw Mill Machinery Our Specialty.

There are some 300 of our saw mills running in South and Central America, Europe, Asia and Africa, of different sizes, from those cutting logs 6 feet in diameter to small mills sufficiently portable for mule-back transport.

WATEROUS, BRANTFORD,
CANADA.

America Supreme in Raw Materials.

(From Our Special London Correspondent.)

LONDON, NOV. 1, 1896.

SOME little time ago, when there was a decided rise in prices in the metal trades of the United States, one of our English hardware papers thought the occasion was very appropriate to issue a note of warning to the English manufacturer of such goods. It dealt with the beneficial effect which such increase in prices would have as regards American competition with English metals in the United Kingdom, arguing very rightly that the increase in prices would have the inevitable effect of keeping American metals out of our market. These circumstances, said the writer, would give a decided advantage to the British exporter and manufacturer, "if they were wide awake enough to make the best of the situation," and then, in tones of exultation, it was added: "We shall hear no more for some time of exports of billets, etc., to England, but I venture to predict that when the next era of bad trade comes in United States of America we shall have to be very wide awake indeed to meet and stave off their (American) competition. As a matter of fact, it would be prudent to begin now and work with one eye open to the inevitable fight which must come sooner or later."

That does not seem to be a very exhilarating note of triumph on the part of English manufacturers, and it seems from the above paragraph that, even in a moment of security, English makers must be on the alert for the "inevitable fight which must come sooner or later."

Some very interesting public lectures have quite recently been given in London by Mr. James Douglas on American methods of metallurgy, and I was struck with his remarks on American production. He pointed out that it is a cardinal principle of American industrial life that what can be made abroad can be done at home, and if there is any profit in the doing thereof, that profit may as well accrue to the producer, or, at any rate, to his countryman. As a consequence, crude materials of all kinds will be exported in diminishing quantities from the United States, but will be manufactured at home into articles of ultimate utility, and in those forms will compete in the markets of the world with the produce of Europe's workshop.

The percentage of cost chargeable to labor is higher in winning the crude material of any industry than in converting it into finished forms. Hand labor virtually ceases, for instance, when the farmer turns over his wheat to the miller of Minneapolis; so in the metallurgical industry it is in the mining of iron and copper ores, and of the coal for their reduction, that labor plays a more conspicuous figure than in directing the automatic machinery with which all the best furnace plants and rolling mills are now equipped. Further, the stimulus to mechanical invention and application, which high labor cost impressed upon American metallurgy, will not exhaust itself no matter how rapidly labor cost may decline or approximate the European standard. If, therefore, heretofore, with the great disparity in wages which has prevailed, competition in certain branches has been possible, the field henceforth of successful competition will undoubtedly be enlarged, and the struggle in the arena of the world's market become keener and keener.

If we turn to the production of pig iron in the United States we find that the output of the American furnaces excels the English. In the Pittsburgh district, where there are 23 blast furnaces, the yield of pig iron is one ton to one ton of coke; while a furnace at the Edgar Thompson Steel Works is said to have used as low as 1,845 pounds of coke to produce one ton of iron. The productive power of the Edgar Thompson furnace at Pittsburgh, which is the largest in the United States, is interesting, especially when compared with the largest furnace in the United Kingdom—that at Newport. The figures so given are as follows: The English furnace has a capacity of 30,000 cubic feet, produces daily 70 tons, uses 2,308 pounds of coke to one ton of product, with 150 hours as the time of a furnace operation. The United States furnace, with much smaller capacity, 18,000 cubic feet, produces daily 271 tons, uses only 1,863 pounds of coke to one ton of product, and crowds an operation into 21 hours.

The manufacture of coke in the United States is a typical example of American progress. It was first started in the Connellsville region in Pennsylvania, and it has over 17,000 ovens in the basin. The first coke was made in this region in 1841 in 10 ovens. From this small beginning has grown a business that in 1891 amounted to an output of some 5,000,000 tons, or nearly one-half the product of the United States, giving direct employment to about 18,000 men.

Every cycle of trade depression tends to bring American prices nearer to those of English makers in the metal trades. In the United States the manufacture of Bessemer and basic steel is being steadily cheapened. Steel in the rough has been sold in Pittsburgh at \$21.75 per gross ton. In 1867 steel rails there cost about \$165 per ton; in 1872, \$112; in 1882, \$48, and lastly, they cost \$30 a ton.

The introduction of improved machinery has had a great influence in decreasing the cost of production; its use is increasing in mining the ore, in getting out the limestone to be mixed with the coal and ore, and in saving manual labor at every stage of the process. One machine alone at the Carnegie works in Pittsburgh cost \$1,000,000.

If we turn to coal and the cost of mining the same in English and American mines we find pretty much the same result. Writing some two years ago, the Secretary of the British Iron Trade Association said that "so far as the United States are concerned, we have to face the prospect of being permanently dislodged from our former supremacy of rank as a coal-producing country. In the virgin fields of that richly endowed country a miner produces almost twice as much coal in a day as is produced in England; so that in spite of the payment of a higher average rate of wages the United States have for some years past been producing coal at a cost not much exceeding one-half of that of many coal fields that are being worked in the United Kingdom." In other words, while

the value at the pit's mouth of the British coal output has been returned at \$1 93 per ton, or thereabouts, for some years past, that of the United States, taken as a whole, for the census year 1890, was returned at about \$1 per ton, and is perhaps even less now.

I do not generally deal with the question of raising raw materials in these letters, but rather with the production of manufactures in America and their relative value and merits as compared with similar articles made in Europe, the object being to give foreign buyers and readers an opportunity of comparing the rival claims of such goods. I have been tempted out of the usual track by the facts stated above, which are well known to all persons who study the conditions of the export trade, but which may not be so well recognized by readers of this journal in South America, Australasia, South Africa and other countries. The cheap production of raw materials has, of course, an immense bearing on the cost of the manufactured goods, and every one who fully grasps the full significance of American progress will understand what advantages that country possesses as compared with Europe.

Wire Nails and Nailmaking Machines.

IT is a fact well known in the trade that large shipments of wire nails to Germany and Japan and other foreign countries have been made during the past year by wire nail manufacturers in the United States. Among concerns who have made large shipments are the Consolidated Steel and Wire Company, at Pittsburg. For nearly six months the Cleveland Punch and Shear Works, Cleveland, Ohio, have been working on an order for American nail machines for shipment to Japan. The order was placed through the New York office of the Yokohama firm of Ravar & Co. Details of the contract were arranged by T. Yamaguchi, a Japanese mechanical engineer who visited Cleveland in April. The order includes 40 nail machines for making a wide range of sizes of wire nails, wire drawing machines to draw the wire from rods, and spike and staple machines, besides engines, boilers, pulleys, shafting, etc., and a plant for the manufacture of kegs. The plant is to have a capacity of 400 kegs a day, and its cost, completely equipped, will be about \$125,000. The entire contract will be executed by the Cleveland concern mentioned above. A portion of the machinery has been shipped, and it is expected that the last shipment will be made in December, when a representative of the Cleveland Punch and Shear Works will be sent to Japan to attend to the setting up of the machines and starting the plant.

American Machinery in Belgium.

WHAT are the English toolmakers about that they have allowed the Americans to get so far into European markets as to have supplied most of the equipment for the National Small Arms Factory, at Herstal, near Liege? This factory, which was founded in 1890, and is one of the most perfectly equipped of its kind in Europe, if not also the largest, has been largely fitted with American tools. Thirty per cent. of the equipment is stated in a recent American consular report to have been furnished by Messrs. Pratt & Whitney, of Hartford, Conn., while additions made during the past year to the value of £28,900 have been supplied by the same firm and by Messrs. Brown & Sharpe, another American house. It would be interesting to know whether any English houses were asked to tender, and how the tenders compared, but this information is not given.—*London Iron and Coal Trades Review*.

Machinery for England.

THE PRATT AND WHITNEY COMPANY is now running on full time, being chiefly employed on special machinery for making bicycle parts. There is a bigger bicycle craze in England and France than ever before and the manufacturers appear to depend largely for the success of their product on the fine machinery which is made in Hartford. In the early days of bicycling English machines had a big sale in the American market and many bicycles of foreign make are yet sold in this country. It is interesting to learn that when a man buys one of these he practically buys an American machine, all parts being turned out on American-made machines.

The end of the foreign demand for bicycle making machinery is not in sight and an addition of as many as 300 men to the Pratt & Whitney Works to secure increased output is on the cards for the coming year.

THE VILTER MANUFACTURING COMPANY, builders of ice making and refrigerating machinery, Milwaukee, Wis., U. S. A., recently shipped for export to Dortmund, Germany, a 75-ton refrigerating machine together with a 200 horse power tandem compound Corliss engine, and for export through a New York commission house, a boiler and engine; also to the City of Mexico, two 50-ton refrigerating machines, with Corliss steam engines, boilers, and brewers' and bottlers' machinery; also to Pueblo, Mexico, one 50 horse power Corliss engine and steam boiler.

THE GOUBERT MANUFACTURING COMPANY, of New York, have recently published a very handsome catalogue describing and illustrating the merits of their new water-tube feed-water heaters. The function of these heaters is to economize fuel. The waste steam from the engine, instead of being exhausted in the air is conveyed to the feed water heater and thus utilized in raising the temperature of the water almost to a boiling point before it is fed into the boiler. Any user of steam will appreciate the advantage of this.

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Tremain Steam Ore Stamp,

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All complete with automatic feeder. It only weighs 3,300 pounds.

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OVER 3,000 NOW IN USE.

Every Kind of Mining Machinery.

WE HAVE THE MOST COMPLETE AND MODERN WORKS.

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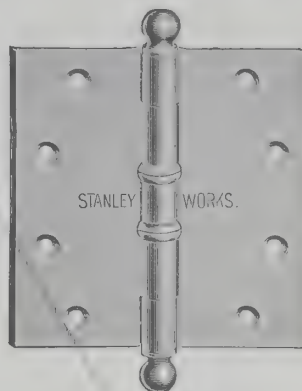
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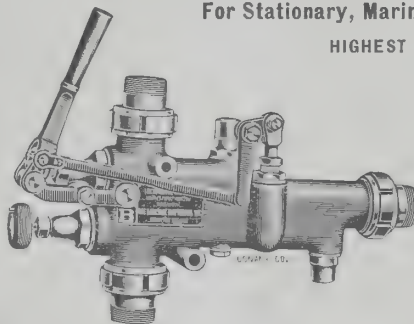
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200,000 Now in Use.



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Simplicity, Durability, Efficiency, Absolute Reliability and greater range of capacity than any other Injector GUARANTEED.

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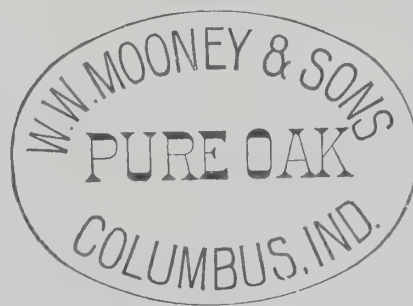
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TRADEMARK.

Tanners and Curriers.

Pure Oak-Tanned Harness Leather.



This means THE BEST.

THE BEST always means THE CHEAPEST.

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The MOONEY Leather has no superior in the markets of the world. A proof of its superiority is the preference obtained for it in England and in the colonies. Why is this so?

MOONEY Leather has great tensile strength.

MOONEY Leather is very durable.

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MOONEY Leather has a beautiful finish.

NO WHEEL-STUFFING PROCESS TO ADD EXTRA WEIGHT!

THE MOONEY LEATHER

IS GUARANTEED

PURE OAK-TANNED,

HAND-STUFFED and

No. 1 TANNAGE AND FINISH.

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Machinery Notes.

—Prince Hilkoﬀ, the Russian Minister of Ways and Communication, before sailing for Europe placed an order for 18,000 American railroad watches for the use of the employees of the Russian railroads.

—An exchange mentions the curious fact that nearly every branch of the electrical industry has made its most remarkable progress during the last three years, which have been chiefly notable as a period of business depression.

—The Hancock Inspirator Company, 51 Oliver street, Boston, Mass., have published a catalogue concerning the Hancock locomotive inspirators and general jet apparatus. During the past 20 years more than 200,000 of these inspirators have been sold and put into service.

—The New York and Brooklyn bridge was a great wonder, but the East River bridge, to be built a mile and a half north of the old one, will be larger in every way, having six railroad tracks, two driveways, two walks, and will be one of the most notable single span bridges in the world.

—John Adt & Son, New Haven, Conn., send us a catalogue illustrating and describing wire straightening and cutting machines, foot presses, sprue cutters, riveting machines, etc., built by them. They are now doing an export trade and for the first time their advertisement appears elsewhere in this paper.

—The Pennsylvania Agricultural Works, of York, Pa., has just completed a much improved traction engine that will be sent to South America to furnish motive power for big gang plows. It is a monster machine with 8 feet tractions. S. S. Morton, traveling machinist of the firm, is inventor of the improvements.

—The Morgan Engineering Company of Alliance, O., made a shipment of 200 tons of machinery to Nijni Novgorod, Russia, a short time ago. The shipment consists of two steam hammers, a hydraulic crane, and a hydraulic flanging press, for the locomotive works in that place, which are being built by Americans.

—Peru Electric Manufacturing Company, Peru, Ind., manufacture a full line of porcelain insulation for electrical purposes, knobs, cleats, motor cut-outs, tubes, main and branch cut-outs, rosettes, switches, etc., and manufacture to order any porcelain specialty desired. They are makers of the Laclede and Hercules batteries.

—The report of the Bureau of Statistics demonstrates a large increase in the exports of manufactured goods from the United States. For the first eight months of the calendar year the increase is larger than in any similar period. The demand for locomotives, bicycles, cars and electrical apparatus and machinery of all kinds is increasing.

—The Barstow Stove Company, Providence, R. I., recently shipped a lot of portable coal ranges to Christiania, Norway. This company make several shipments to this place yearly, and Hon. T. Soegaard, the Danish Vice-Consul at Copenhagen, says there is a large field in that locality among the Baltic countries for American manufactured products.

—A 43-mile branch of Collis P. Huntington's Mexican International Railroad has just been opened to traffic from Metamoros, on the main line, to Zaragoza, which is in the heart of the Laguna cotton-growing region in Mexico. There are three great cotton mil's in that particular section of country, one at Monclova, one at Sattilo, and the third in Parras.

—What is said to be the thinnest sheet of tin plate ever made was finished at the Blairsville (Pa.) Rolling Mill and Tin Plate Company's plant a few days ago. Its thickness is not greater than tissue paper and it is perfect in finish throughout, and it is a marvel of mechanical skill. A micrometer gauge is not delicate enough in operation to register its thickness.

—The steamship *Algoa*, which sailed from Galveston, Texas, U. S. A., for Liverpool, took what is claimed to be the largest cargo ever shipped from an American port. It consisted of 18,260 bales of cotton, 104,000 bushels of grain and 640 tons of other freight, making the bulk of 24,000 bales of cotton. The value of the cargo was about \$1,000,000, and the freight paid over \$70,000.

—Manufacturers of fire brick and silica brick have received a contract to furnish all the material to be used in the construction of the new open hearth plant of the Mariopol-Nicopol Mining & Metallurgical Company of Mariopol, Russia, amounting to about 75 carloads. Up to a few years ago all the silica brick used in the United States was imported from Wales, but the above-named company have built up a very large trade and are now in position to export to other countries.

—The Reglo Electric Power Transmission Company of Pachuca, Mexico, will begin the last of this month to send power into that important mining city from Water Falls, 25 miles distant, and it is estimated it will be able to furnish 1,200 horse power. Several great reduction works will take this power at an annual charge of \$250 per horse power per 24 continuous hours. The Pelton water wheels are employed, and all machinery and supplies are from the United States.

—Mast, Foos & Co., Springfield, Ohio, report domestic trade as quiet, but showing a tendency toward improvement. Export trade has been more satisfactory, and they report a steady demand for their iron turbine wind engines during the year, the company being now engaged in filling a large order from Australia. They are placing a large number of their galvanized Imperial wind mills in the United States. These mills are made of steel and malleable iron instead of cast iron.

Copper Exports.

COPPER has become one of our most important exports, the quantity sent abroad showing a large increase. For the first seven months of 1896 the export of fine copper was 142,476,307 pounds, as against 78,110,642 pounds in the corresponding seven months of 1895. There was, besides, a considerable shipment of copper matte, amounting to 11,019 tons, representing 16,585,408 pounds of fine copper, and carrying the total shipment of the latter up to 159,061,715 pounds. This is at the average rate of 22¼ million pounds per month, an export unprecedented in the history of American copper production. The value for the seven months was \$16,546,172, or at the rate of more than 2¼ millions of dollars a month. The United Kingdom, France and Germany are our chief buyers, but the other countries of Europe took nearly one-third of the whole, their purchases being largely increased over 1895.

How to Test the Quality of Coal.

AN apparatus by which an engineer may test or determine the quality and adaptation of the coal he receives is described in the *Boston Journal of Commerce*. The test is not intended to be an analysis, but principally to show the amount of fixed carbon in the coal and the percentage of ash. As each carload of coal is received samples are taken from twenty or more parts of the car, thoroughly mixed and quartered, each quarter being also mixed and quartered until the sample is obtained; this sample is then carefully weighed, the volatile matter driven off, weighed again, and the carbon consumed, and the ash weighed. This estimate is important in guarding against the use of coal having an undue percentage of ash. The various coals differ in the percentage of ash which they contain, some Cumberland coals having from 12 to 14 per cent. of ash, while a good New River will have as low as 3 or 4 per cent. Thus, though the coals may look alike to the average engineer, the heat value characterizing them is 10 per cent. greater in one description than the other, and, ascertaining this, an important saving in the cost of fuel may result.

THE Watson Mining and Manufacturing Company, of Monongahela, Pa., U. S. A., recently received an order from Marapolari, Russia, for 250 crates of fire brick "shapes" to be used in the building of a large factory now being erected at that place. New York and New England capitalists are building an immense iron plant to include tube works, locomotive works, armor-plate mills and several open-hearth steel furnaces.

TWO crushers with a daily capacity of 300 tons each have just been shipped by the Gates Iron Works, Chicago, to the Coolgardie gold fields of West Australia. This firm has also taken an order for one of its largest crushers, capacity two tons per minute, for shipment to the Basalt Actien Gesellschaft, of Koln, Germany. The machine will be used for making ballast from basalt rock. This company's advertisement appears for the first time in this paper, and so we direct our readers to the same on page 21.

THE Falk Manufacturing Company, of Milwaukee, Wis., has received an order from the Thomson Houston Company, of Paris, France, for a complete welding outfit of the pattern recently patented by the Falk Company, and which has been operated on the streets of Milwaukee in welding the rails of the car tracks together. The order from Paris stated that the machine was to be used on a line at Lyons, France, to weld 210 miles of street-car track. The money consideration is estimated at \$125,000.

B. SCHUCHARDT, of the firm of Schuchardt & Schutte, of Berlin, and H. Greif, his chief engineer, is now here inspecting some American factories with a view to importing American machinery to Germany. "Germany has just recovered," he said, "from almost a score of years of internal political strife, and now business is increasing with remarkable rapidity. The demand for American machinery is constantly increasing, as the large European manufacturers look to this country for the latest and most advanced machinery."

PAPER boats will soon be put on the market by Messrs. Warren & Guernsey, of Dover, N. H., who have just made a trial trip in their little paper boat. It weighs 37 pounds, is 3 feet wide and 11 feet long, and is perfectly seaworthy. After these young men had made their model they commenced to paste layer over layer of newspapers together until a thickness of 21 newspapers had been stuck together. They allowed this to dry, and then the paint was applied. Their boat amidships resembles a canoe, yet the bow and stern are built in the shape of a duck's breast, which they claim is a great advantage in paddling.—*The Paper Mill*.

IT is a striking indication of the rapid abandonment of wood as a shipbuilding material that more than one-half—to be exact, 106,900 tons—of the 204,000 tons of shipping built in the United States last year was of steel construction. Not only steamers, but tugs and barges are now very largely built of steel, and the next natural step will be its application in the heavy sailing freighters in our coastwise trade. Some of the latter four-masted schooners are of upward of 1,500 net tonnage and about 250 feet long. The rigidity of frame which the use of steel gives is a valuable quality in vessels of these great dimensions.

—The Atwood Machine Company, of Westerly, R. I., have recently shipped a large consignment of improved silk machinery to Russia.



DR. J. C. AYER & CO.'S STANDARD FAMILY MEDICINES.

Approved by the Profession.

Full directions, in various languages, accompany each bottle of our medicines.

Ayer's Cherry Pectoral,

For the rapid cure of Diseases of the Throat and Lungs.

Ayer's Sarsaparilla,

For purifying the Blood and the cure of Scrofulous Diseases.

Ayer's Ague Cure,

Warranted to cure all Malarial Disorders.

Ayer's Hair Vigor,

For Restoring gray hair to its Original Vitality and Color.

Ayer's Cathartic Pills,

The most valuable Home Remedy for all Purgative Purposes.

Prepared by Dr. J. C. Ayer & Co., Lowell, Mass., U. S. A. Dealers liberally supplied with almanacs, show cards, and other advertising material.

THE BALDWIN DRY-AIR REFRIGERATOR.

One hundred and ten varieties. For family use, grocers, hospitals, restaurants, hotels, markets, etc.

Positive circulation of dry air! New and handsome designs! Low prices!

THE U. S. GOVERNMENT

continues to order the Baldwin for its Marine Hospitals and Quarantine Stations after a dozen years' practical use.

MERIT TELLS.

Send for Catalogue.



BALDWIN REFRIGERATOR CO.
BURLINGTON, VERMONT, U. S. A.

Water for the Home, Farm AND Ranch!

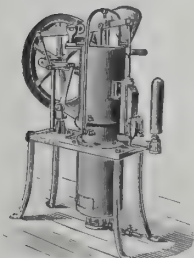
WATER YOUR STOCK,
WATER YOUR LAND
AND WATER EVERYTHING
DEPENDENT UPON WATER

WITH THE

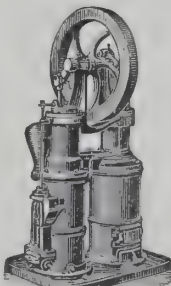
**DE LAMATER-ERICSSON
HOT-AIR PUMPING ENGINE**

AND THE

**DE LAMATER-RIDER
HOT-AIR PUMPING ENGINE.**



De Lamater-Ericsson.



De Lamater-Rider.

No Other Means so **SAFE, SIMPLE, ECONOMICAL** and **RELIABLE**

Windmills are Uncertain, Unsightly and Destructible.

Rams require favorable conditions and waste water.

Steam Pumps require skilled labor and lots of fuel.

Hand Pumps require hard labor and lots of it.

Gasoline Engines are a disappointment to both the makers and purchasers.

Buy a Hot-air Pumping Engine and you will be Satisfied, Contented and Happy.

DE LAMATER IRON WORKS,

CATALOGUE.

467 WEST BROADWAY, NEW YORK, N. Y., U. S. A.



METALS PERFORATED AS REQUIRED FOR

SCREENS OF ALL KINDS

FOR USE IN

Milling and Mining Machinery,	Stone, Coal and Ore Screens,
Reduction and Concentrating Works,	Stamp Battery Screens,
Woolen, Cotton, Paper and Pulp Mills,	Brick and Tile Works, Filters,
Rice, Flour and Cottonseed Oil Mills,	Spark Arresters, Gas and Water Works,
Sugar and Malt Houses,	Oil, Gas and Vapor Stoves,
Distilleries, Filter Presses,	Coffee Machinery, etc., etc.

STANDARD SIZES PERFORATED TIN AND BRASS ALWAYS IN STOCK.

Main Office and Works: No. 218 North Union St., Chicago, Ill., U. S. A.

Eastern Office: No. 284 PEARL STREET, NEW YORK.

ARCHITECTURAL SHEET METAL WORKERS



Enhance the beauty
of your dwellings and
business houses with
metal trimmings.

Pediments, Cornices, Window and Door Heads, Bay Windows, etc., of sheet metal (galvanized, iron or copper) are handsome, light and inexpensive. We have furnished the export trade satisfactorily for years. Write us for information and estimate.

Gara, McGinley & Company,

25 So. 17th St., Philadelphia, Pa., U. S. A.

New Jersey Copper Paint

LEADS THEM ALL,

So our testimonials say.

We guaranteed this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from American Institute, New York City.

NEW JERSEY RED COPPER,

For yachts. Brightest color made.

NEW JERSEY SEAM PAINT,

A perfect substitute for pitch

NEW JERSEY PAINT WORKS

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

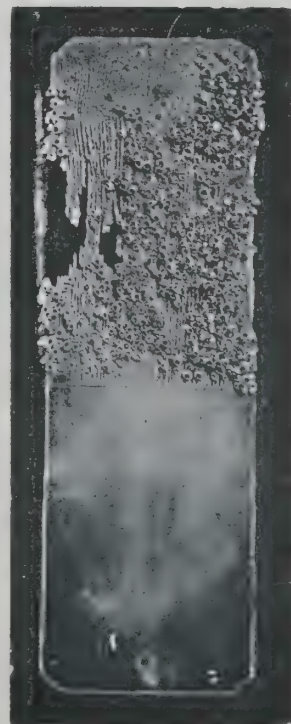
U. S. A.

REMARKABLE FACT.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—it is in splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD,
Master Schooner "Florence Shya."



Gold Paying Balance of Trade.

"DURING the last nine months," says the official report of the United States Bureau of Statistics, "imports of dutiable merchandise were about \$82,429,000 less than the amount for same period last year." That is one reason why the deficit in the appropriations for the current fiscal year is steadily increasing. Less dutiable goods are being imported, therefore the Government derives less revenues from imports. The same official report states that our exports of merchandise for the expired nine months of 1896 were "\$650,931,318, against \$564,424,359" for the same months in 1895—an increase of \$104,488,959. That is the reason why we have received \$64,888,836 of foreign gold during the past nine months, and that is the reason why we will receive \$50,000,000 to \$75,000,000 more of foreign gold before 1896 closes. The American people are not buying so many foreign goods, and there is generally increased loyalty in patronizing home institutions through purchasing American-made goods. The touring season abroad is nearly over, and there is no doubt of proportionally increased receipts of foreign gold during the next six months, for the reasons that our people will not be spending so much money abroad and the world must have all of our foodstuffs that we can spare. The balance of trade outlook is promising, and there is no doubt but that our money in circulation will be larger in aggregate before the year closes than ever before. All that we need to make certain of the prompt return of good times and general prosperity, for all the American people who can and will work, is an overwhelming majority in the November ballot boxes for the maintenance of honest money.

Trade with Jamaica.

WHILE during the past three years the trade between England and Jamaica has been steadily declining that of the United States has advanced by leaps and bounds. The fruit trade here is entirely in the hands of American dealers, while in the importation of general manufactures the great bulk of which came some years ago from England, almost 51 per cent. is now consigned by the United States. The figures speak for themselves. In the years 1893-94 the textile materials imported into the island from the United States amounted to only 4 per cent. of the whole. The present year shows a gross value of \$255,780, or 10 per cent. of the whole. In metals the percentage has leaped from 28.8 in 1894-95 to 41.6 in 1895-96. In general manufactures the increase since last year is 4.1 per cent., or 50.2 per cent. of the whole.

The question of American trade competition in British West Indian colonies has had the serious attention of the English home government. A dispatch was recently received by the Colonial Secretary of this island from the Colonial Office, London, drawing attention to the fact that English manufactures were being gradually driven out by those from the United States, and asking for a full report, together with such suggestions as local experience might furnish. A reply, with the statistics on the subject, is in the course of preparation.

Whatever artificial means may be adopted to bolster up a fast-decaying trade with England, there is little doubt that the United States are the natural source of supply for these West Indian islands, and, with the decline of the sugar industry and the increased cultivation of the fruit trade, the natural outlook for their products.

American Enterprise in China.

MR. CHARLES DENBY, JR., of the American Legation at Peking, reports to the Department of State, Washington, that considerable interest is now being displayed in China by American capitalists, railway contractors and ship-builders. He mentions among those who are most active in this new field for American enterprise the American Trading Company, of New York, London, Yokohama and Shanghai, which, in addition to its usual business of exporting and importing, has recently become the agent of the Cramp Ship Building Company, of Philadelphia, Pa., and of the Union Iron Works, of San Francisco, Cal.; Mr. A. W. Bash, of Port Townsend, Wash., the representative at Peking of a wealthy combination of capitalists in New York who wish to secure railroad, mining and other contracts in China; this syndicate has organized a company called the American China Development Company, incorporated under the laws of the State of New Jersey. The Bethlehem (Pa.) Iron Works have been represented in Peking during the Winter by Captain Zalinski, U. S. A., retired. This company wishes to obtain orders for armor plates, disappearing guns, quick-firing guns, ammunition, etc.

PRINCE MICHAEL HILKOFF, Russia's Minister of Railways and Communications, while in this country during the past month, spent a day in Cincinnati, where he visited the works of the J. A. Fay & Egan Co. in order to examine their machines for making cars. It is reported that he was most favorably impressed with these machines. Much to the surprise of everybody who stood by while the machines were being operated for his inspection he made comments and suggestions that proved him to be possessed of great mechanical and business ability. He took a special interest in a machine for tenoning, gaining and cutting off car timbers at both ends at the same time, and he expressed himself as much gratified with everything that he saw.

—An order which the Westinghouse Machine Company recently received through its Paris branch for a 1,200 horse-power engine similar to those exhibited by that company at the World's Fair would seem to indicate that some features of the great Exposition made substantial and lasting impressions on our foreign visitors. The engine is to be used in an electric-lighting station in France.

Paper Bottles Coming Into Use.

SOME years ago there was started in this city a company for the manufacture of paper bottles, says the *New York Mail and Express*. It was not the success that its promoters intended it to be. There was great difficulty in getting the right foothold. It was pointed out that paper was being used very extensively in the manufacture of car-wheels, rowing shells, wash-basins and a half-dozen branches of the decorative art, but nobody would believe that the bottle scheme could possibly succeed, and there the matter was dropped as far as outside capital was concerned. Since that time another company has managed to push forward the idea with some degree of prosperity. Now another company is about to be formed, and it will have to be a success, because there is too much money behind this concern to make it otherwise.

This manager was asked what paper bottles were available for, and he answered quite promptly, if not altogether sarcastically:

"Everything that glass is used for." Then he added: "We are now negotiating for the purchase of some of the finest machinery to be found in a newly established shop. We have this to claim for our bottle. It cannot be broken unless with unnecessary force. That is just where the saving is to come in. No more leakage or breakage, and consequently less loss to not only the consumer but the merchant as well. We intend to make a big bid for the foreign trade. The wine merchants of Europe lose an immense sum annually through breakage in a ship's hold or otherwise. No matter where the glass bottles break, they are broken, and the loss is just as great all around. We can make a paper bottle for about one-half the cost of glass bottles, and, in addition, they will be found perfectly water-tight, as well as air-tight. We have made innumerable experiments, and in all of them we found that, while it was comparatively easy to make papier-maché air-tight around wine it was not so easy to do so in the case of beer. Why this is so the brewers may explain. But we have overcome the difficulty, too. Another point that should be remembered in the manufacture of paper bottles is that there is little danger of freezing. Still another is that in packing them away absolutely no straw, waste or such is required, and the absence of these means a large saving in space. In the next few years you will find paper bottles all over the world."

Good Times Coming.

IT looks that way! Crop shortages in Europe, Russia and the Argentine are creating an extraordinary demand in England and on the continent for American produce. Our exports are increasing so rapidly that ocean freight rates have heavily advanced, consequently tramp steamers are all racing for our coasts to get cargoes. This will bring down rates again and insure abundant means for transporting our surplus to the other side.

Prices are advancing all along the line. Wheat and oats are higher, so are tobacco and cotton; wool is improving, and with last year's extraordinary corn exports now being doubled, even corn is advancing in the face of the biggest crop on record. Reactions are probable if prices go up too fast; but even if present values are only maintained it means millions upon millions of extra profit to American farmers.—*Orange Judd Farmer*.

A New Port.

MONTEVIDEO, URUGUAY, it is reported, has arranged to build a new port and to have the work begun at once. This is the result of an effort which has for a long time excited the patriotic interest of Uruguay, Paraguay and the Rio Platte country.

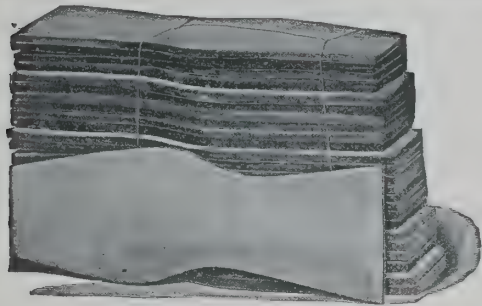
The project involves the expenditure of about \$15,000,000 gold, and when completed the port charges, which now amount to nearly \$5 per ton, will be reduced one-half. Under the concession the custom house receipts will contribute the interest on the loan and go into the sinking fund to extinguish it.

In addition to this practical expression of confidence in Uruguay's stability and prosperous future, it is reported to the Consul-General that the National Bank of Uruguay has been established, with a paid-in capital of \$10,000,000 gold.

A NUMBER of Americans have been in Guadalajara, Mexico, recently in search of enterprises in which to invest a large amount of capital. It is proposed to form a company to manufacture steel, etc. The government will be asked for a concession to aid the plant. As this is an entirely new business in that republic, there is no doubt that the founders will reap a harvest and will facilitate the construction of railroads, since at present all kinds of material for these works are brought from the United States.

—A 3,000-ton steamship left Seattle, Wash., on October 27 for Ocos, San Jose de Guatemala, Champerico, Acajutla and La Libertad. It has not been announced whether this is to be a permanent venture or not. The *Seattle Trade Revister* says that it is reasonable to expect the Central American trade to and from Puget Sound to expand rapidly; that with the further development of this trade must come important coffee transactions. This will mean the necessary facilities at Seattle for the proper handling and distribution of Central American products.

—One shoe factory in Massachusetts, employing 233 hands, produces 2,100 pairs of women's shoes in a day, or on an average of about nine for each hand. Each detail in making the shoe is done separately, even to the sewing on of the buttons. Thus a pair of shoes passes through 53 hands in making.



American shoemakers and shoe-menders have got ahead of you. They don't buy whole sides or sole-leather now.

A shoemaker wants 2 or 3 grades and 4 or 5 thicknesses.

We cut sides, make 8 grades and 15 thicknesses, sell the cobbler the grades he wants, and the rest, including the waste, to somebody else, who wants that.

All well served; no waste; no using leather because you've got it.

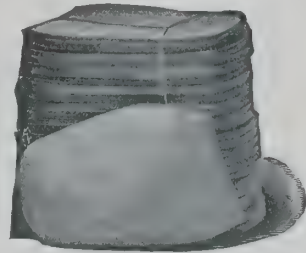
We do this business better than anybody else—it is a close wholesale business.

Do you want to know about it?

BAXTER SCHENKELBERGER & CO.,

350 Congress street, Boston, U. S. A.

50 Tabernacle street, London.



THE DENSMORE, "The World's Greatest Typewriter."

WRITES 84 CHARACTERS.

LIGHTEST KEY STROKE, HANDIEST, QUICKEST, STRONGEST.

Represented in more than 200 Cities in the United States and in

LONDON, 85 Queen Street.
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PRAG, Austria, 55 Mariengasse.
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MUNICH, 17 Weinstrasse.
ST. PETERSBURG, Puschkinskaja 7.
BUENOS AYRES, 349 Calle Reconquista.
SYDNEY, N. S. W., 114 Pitt Street.
QUEBEC, 25 St. John Street.
VICTORIA, B. C., 23 Board of Trade.

FROM THE U. S. GOVERNMENT.

{ DEPARTMENT OF THE INTERIOR,
WASHINGTON, Nov. 23, 1895.

DENSMORE TYPEWRITER CO.

Gentlemen—We have now in use in the Bureaus of this Department nearly eighty Densmore machines. We have no complaint from the users of them, hence we conclude they are giving entire satisfaction. Respectfully,

(Signed) HIRAM BUCKINGHAM, Custodian.

FREE: Illustrated pamphlet with testimonials from leading concerns.

Active, responsible **DEALERS DESIRED** in all open foreign cities.

DENSMORE TYPEWRITER CO., 316 BROADWAY, NEW YORK, U. S. A.



JENKINS BROS.' VALVES,

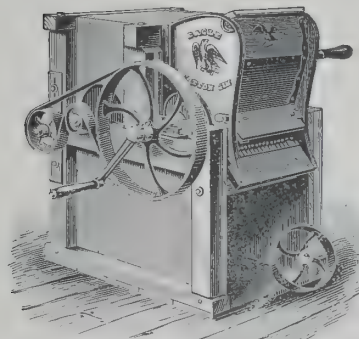
Globe, Angle, Cross, Check, Safety, Blow-Off, Etc.,

Are manufactured of best steam metal, and are suitable for any pressures of Steam, Oils or Gases. Contain Keyed Stuffing-Box and Disc Removing Lock-Nut, making them the easiest and cheapest to keep in repair. The Jenkins Discs used in these Valves are manufactured to stand High Pressure Steam. Warranted as represented. None genuine without Trade Mark. Send for Catalogue.

JENKINS BROS., 71 JOHN STREET, NEW YORK, U. S. A.



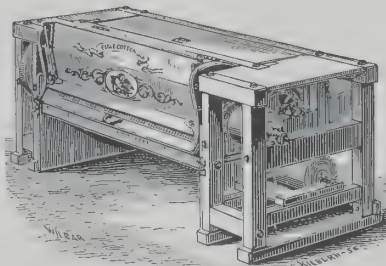
EAGLE COTTON GINS.



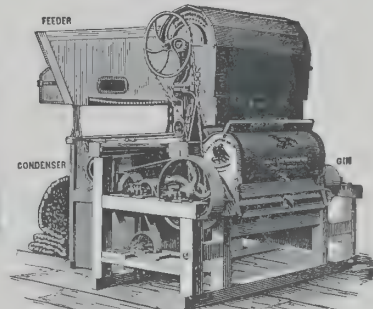
These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details, illustrated Catalogues will be furnished on application.

Eagle Cotton Gin Co. { FORMERLY Bates, Hyde & Co. } Bridgewater, Mass.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

OUR FOUNTAIN PENS

On receipt of \$10 we will send a sample line at export prices.



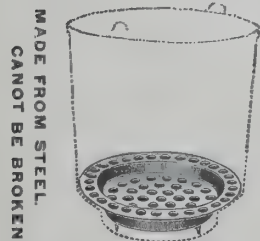
have holders made of best quality vulcanized rubber, are elegantly finished and are fitted with best make of Gold Pens.

Foreign buyers will do well in corresponding with us, as our prices will be found satisfactory.

Our goods can be ordered through any commission house.

Catalogue "D" sent on request.

PREMIER PEN CO., 534 Walnut St., Philadelphia, Pa., U. S. A.



SAFETY KETTLE BOTTOM.

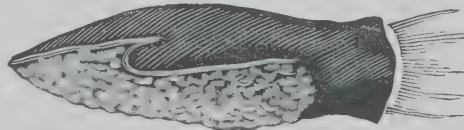
Prevents Meats and Vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

Stove Polishing Mitten,

FOR BLACKING AND POLISHING A STOVE.

It is one of the most valuable articles ever introduced in the household. Keeps the hands clean. Every woman will appreciate it after one trial. Easily fits the hand, has a waterproof back, and the whole front is made of the most durable and soft sheepskin, tanned with the wool on, superior to all others. With each mitten we give a dauber. By using the Stove Polishing Mitten, blacking a stove ceases to be dirty and disagreeable, which every lady dreads; for in the old way she knows it will take twenty four hours to get the blacking out of her finger nails. But our mitten does away with all that, for she can make her stove shine like a mirror, and in one minute go to the parlor, entertain company, make bread, or sit down and sew on the finest white goods, without a speck of blacking on her hands. \$18.00 per gross F. O. B. at New York.

For Particulars address **DIAMOND HARDWARE CO., 620 Atlantic Ave., Boston, Mass., U. S. A.**



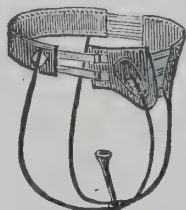
THE HASTINGS & McINTOSH TRUSS CO.,

Established 1872.

Successors to

THE HASTINGS TRUSS CO.

224 SOUTH NINTH STREET,
PHILADELPHIA, PA.,
U. S. A.

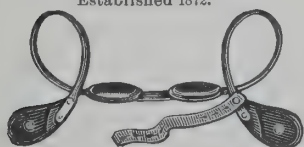
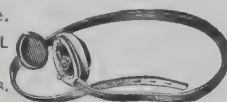


Manufacturers of all kinds of Indestructible **TRUSSES,**

Hard Rubber, Elastic and Leather-Covered
Abdominal and Uterine Supporters, Shoulder Braces, Crutches,
Elastic Hosiery and Body Belts.
For Home and Export Trade.

Sole Makers of the CELEBRATED DR. McINTOSH NATURAL
UTERINE SUPPORTERS.

We solicit orders through export commission houses.
Send for Catalogue and Price Lists.



"Keystone" Power Corn Shellers

Are guaranteed to be unsurpassed in amount and quality of work, power required and durability. Valuable improvements have recently been perfected.

"X. L."
"KEYSTONE"
"PONY"
ARE FOR
POWER
OR
HAND USE.



6 HOLE,
4 HOLE,
2 HOLE
"KEYNOTE"
ARE
SELF-
FEEDING.

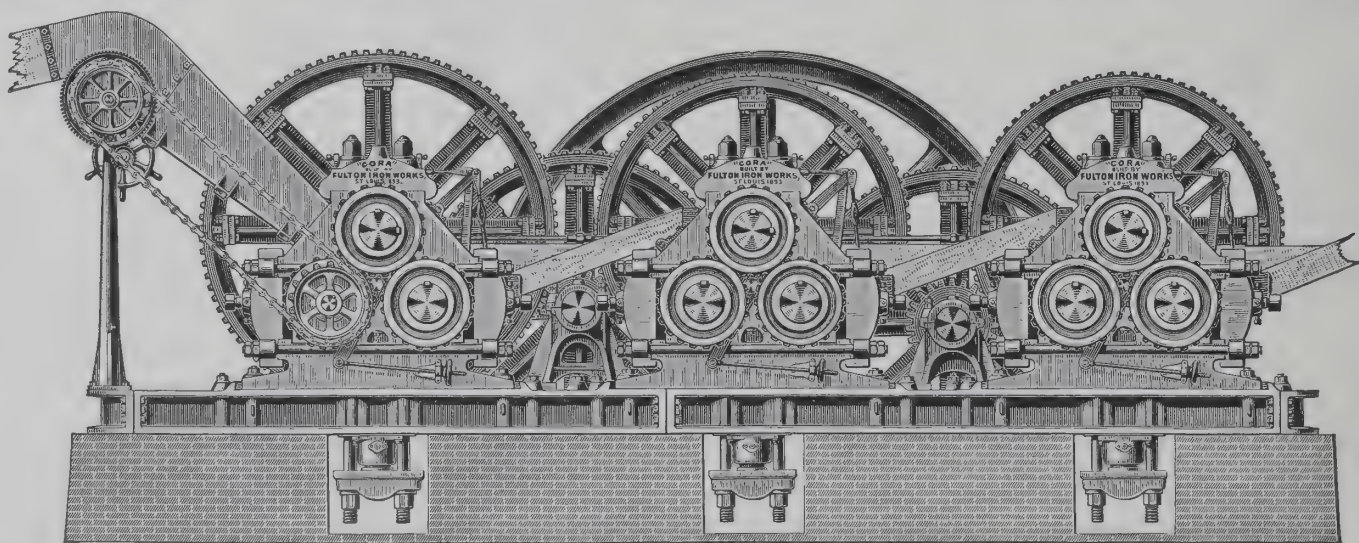
Made by
KEYSTONE MANUFACTURING CO.,
STERLING, ILLINOIS, U. S. A.

SEND FOR DESCRIPTION AND EXPORT PRICE LIST.

Address Export Office,
KEYSTONE MANUFACTURING CO.,
B 19-21 Produce Exchange, New York, U. S. A.

"CORA" Nine-Roller Cane Mill.

CORRESPONDENCE SOLICITED.



ESTIMATES FURNISHED.

Built by **"FULTON IRON WORKS,"** St. Louis, Mo., U. S. A.

Per S.S. "COPTIC"

FULTON IRON WORKS, St. Louis, Mo.

HONOLULU, H. I., June 17th, 1895.

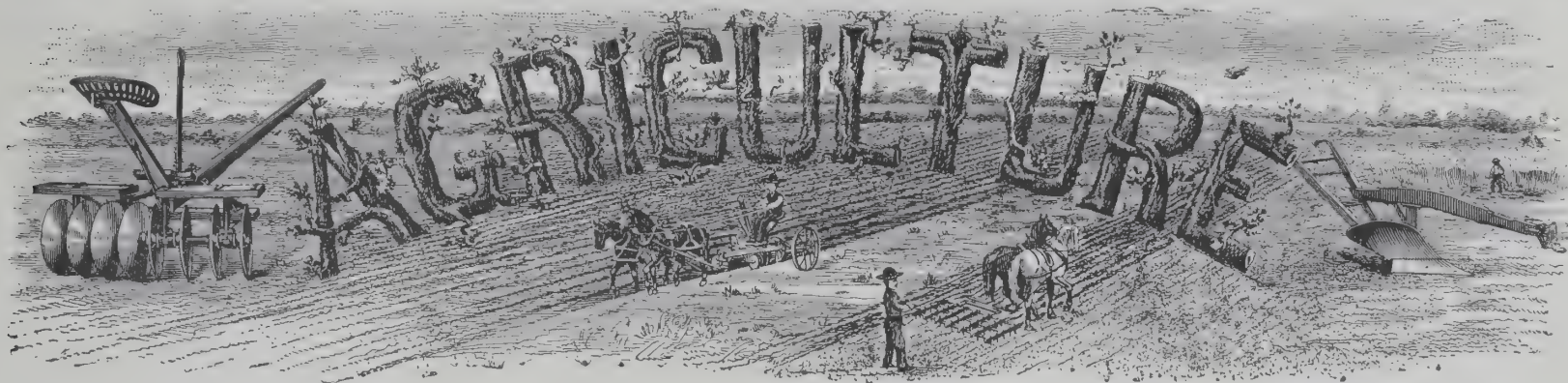
Dear Sirs: The nine-roller mill and Corliss engine built and erected for us by you last year has given perfect satisfaction, and we take pleasure in furnishing you with the following report covering work performed by it during the season just closed. Days grinding, 104³/₄; Tons of cane ground, 61,617.928; Tons of cane ground per day, 588.238. Extraction: 92.49 per cent. total sugar; 82.13 per cent. of cane; Dilution, 7.91 per cent.; Fibre in cane, 11.02 per cent. Average load on hydraulics, 313.2, 334, 344.5 tons.

It is hard to say just what is the capacity of this mill, as our boiling house is not of sufficient size to admit of a prolonged test, but we would say that we have ground on a short run over 50 tons of cane per hour, and with an increase of from 50 to 75 tons in the load on the hydraulic obtained an equally good extraction. We believe we have the best mill on the Islands.

Very truly yours,

EWA PLANTATION CO.,

E. D. TENNEY, Secretary.



DEVOTED TO THE FOREIGN TRADE IN AGRICULTURAL MACHINERY AND IMPLEMENTS

The Great Rise in Wheat.

THE price of wheat has advanced 22 cents per bushel within the last six weeks. The average wheat crop of the United States for three years past has been about 450,000,000 bushels, and the recent rise in the price would add \$99,000,000 to the value of the whole crop.

The advance in wheat is logical. Wheat has risen for the simple reason that the world's supply is less than it was a year ago.

Statistics of wheat-growing countries which are competitors with the United States appear to show that the crops of countries which export wheat have decreased about 220,000,000 bushels, while the consuming countries have increased their product only 37,000,000, leaving a net deficiency for the world's harvest of 1896 of 185,000,000 bushels. Australia, Argentina, the East Indies and Russia have all suffered from a partial failure of crops, and the conditions in India are such that, although it is usually a large exporter of wheat, it is now importing from California. It is the shipment of wheat to India that has attracted the attention of speculators and made such a demand upon the limited supply that the price has been advanced sharply within a few days. Shrewd observers believe, however, that the advance is justified by the existing conditions, and will therefore be maintained.

The rise in the price of wheat is not the only recent benefit the American farmer has received from the movement of the markets. His corn is worth five cents a bushel more than it was a few weeks ago, which adds \$75,000,000 to the value of the corn crop, and the advance in oats, though comparatively small, increases the value of that crop \$25,000,000.

An increase in a few weeks of nearly \$200,000,000 in the value of the three great grain crops of the country is certainly gratifying.—*Atlanta Journal*.

American Apples.

IN an article upon the export of American fruits to Europe, printed in the *Sun* eight weeks ago, we spoke of the foreign demand for American apples, which, as was then supposed, would be unusually large this fall. Since that time the shipments of our prime apples to foreign markets have far exceeded those in the corresponding period of other years, and have amounted to nearly 700,000 barrels, while for the first four weeks of last year's season the export was under 50,000 barrels. The shipments will continue yet two months. For most of that time cargo space has been engaged by the apple exporters upon all available outgoing steamers bound for British ports.

The apple crop of the year in all parts of the country has been enormous. As the reports of it came to us from the various States weeks ago, it seemed doubtful whether markets could be found for the millions of barrels which we would be able to spare, after supplying the American demand. The foreign markets, however, have proved to be unusually satisfactory, and that by reason of the shortage in the apple crop of several of the countries of Europe. The British market in particular is favorable to our apple growers, and by far the greater part of the American surplus is shipped to London, Liverpool and Glasgow, from New York, Boston and Philadelphia. The promise from Germany, also, is better than usual.

For abundance and for quality, the yield of the extensive apple orchards of this State has been splendid. We do not believe that the apples brought to this city from the country that borders upon the Hudson have ever been surpassed in quality; and, in saying this, we do not depreciate those that have come from other States of the Union. You could not anywhere find better apples than those to be seen everywhere in the city. They are prime, indeed, beautiful, juicy, rich in taste, good enough for Adam and Eve before they were ashamed, or had any reason to be.

It is lucky for our apple growers and exporters that the crop of the year is of the best quality, since foreign consumers, especially the English, are very particular about their apples. We cannot afford to ship any but the choicest varieties. The English have talked a good deal against American fruits during the past two or three years, for the reason that California had sent them some poor lots of peaches, pears and plums; but we don't believe that the grumpiest Englishman alive could say a word against the American apples which we are shipping to England. The English must surely be happy in their way during the hours devoted to eating our apples.

Apples are cheap, too. They can be bought in the English market at about the price for which they are sold in New York, though some of the steamship companies ask \$1 a barrel for transporting them over sea. While the apples are

cheap to the purchaser, the apple crop is profitable to the American apple raisers. The big orchards, in particular, furnish a very desirable profit to their proprietors. We shall draw some millions of dollars from Europe this year as the price of our surplus apples.

It is a fine sight to see the merry apple pickers at work. We would rather pick apples any day, from morning till night, than loaf in the sunshine. Next to the picking of them, the eating of them is the thing. Horace Greeley, when interested in the "food-reform" movement 40 years ago, was never tired of urging people to eat apples. He believed in their wholesomeness, and he was right.

We are pleased that American apple raisers can give Europe a full supply of that best of all fruits this year.—*New York Sun*.

American Wheat in India.

THERE are grave fears of a famine in India during the approaching Winter, owing to the failure of the last wheat crop there, and it is hardly possible that all the efforts now being made to avert suffering will avail to prevent it entirely. Several thousand tons of California wheat have reached Calcutta, and it is believed that 30,000 additional tons have been bought for home consumption, but the home prices are said to be constantly rising. Many thousands of people are employed in the relief work, and it is hoped by reason of the railway facilities to diffuse the suffering among the people somewhat. India is dependent in this crisis almost entirely upon America for its supply of wheat, and in alluding to this Sir Richard Temple, who has had experience in Indian affairs since 1846, referred to the import of California wheat as a unique fact in the situation. The possibility of landing wheat at Calcutta and selling it at from eight to nine seers per rupee, as is now done, he said was never dreamed of in his time. The seer, it may be explained, is equal to 2.05 pounds avoirdupois, and the rupee is worth about 45 cents. Sir Richard believes that if such a thing can be done in the present emergency, the California imports will suffice to fill the shortage in the Indian supply. Certainly, says he, American wheat sold in India at that price will suffice for the distressed districts, and accordingly he does not see the need for the Government to interfere in the matter. If the American supply should fail, he is certain there is not sufficient wheat in India to meet the scarcity, and the Government might have to buy supplies wherever a favorable opportunity offered. So America now stands in the position of offering India the only possible escape from a famine of widespread proportions.

American Horses.

COMMERCIAL AGENT J. H. THIERIOT, at Freiburg, Baden, in a letter to the State Department, incloses a translation of an article published in the *Illustrirte Landwirthschaftliche Zeitung* (*Illustrated Agricultural Journal*), entitled, "About American Horses." The translation is as follows:

"The question as to the origin, nature, state, quality and condition of American horses has, for some time past, aroused a great deal of curiosity and interest among German farmers, and especially as it is known that the American farmer has given himself unlimited pains and trouble to introduce his horses into Europe, and has now forced us to interest ourselves in and scrutinize this new importation with a keener eye. That the horse was originally brought from Europe to America is just as well known to all as that in certain districts the horse has increased in enormous numbers on that vast continent where there are now still to-day hundreds of thousands of half wild horses. These were mostly of Spanish origin and were never much regarded. English, Dutch, French and other immigrants to North America brought their native horses with them, which caused any amount of mixed breeding.

"In the latter half of the present century cattle-breeding in the United States has made enormous strides toward improvement of breed by importation and crossing of horses and cattle by the most celebrated stocks of foreign lands. It is, therefore, necessary to distinctly classify current breeds and high-class or thoroughbred breeding in the United States. It is reported by all those who studied horse-breeding at the Chicago World's Fair, and by those who have since published special works on horse culture, that America has devoted immense tracts of lands to the special purpose of horse-breeding and cultivation, and has spared no pains or money in inaugurating the best inventions and conditions to further this worthy cause. Yet, in spite of all these worthy

endeavors, it must be stated and avowed that the same care and preciseness existing in Germany for years and years is still wanting in America. The American horse, not to speak of the thoroughbreds, is an animal of regular, good health, with extraordinary hard nerves, good gait and exceptionally good hoofs and legs, not flattering to the eye, but able to stand a great amount of work, tough, hardened against climatic changes, and with the very humane treatment and kindness it receives, has become renowned for its quick perception and rapidity in learning and being trained.

"A special feature with American trainers is their starting in to train a horse in his first year, and it must be this fact that has made the American horses so famous as trotters. It is very peculiar to see how very little care is given to the majority of farm horses and how little attention is given to the choice and variety of their food. These animals are turned out on the meadows and are let take care of themselves, and by very early and hard application to work become worn out sooner than horses of other countries. The second category is composed of good working horses of heavy calibre, and Americans claim that these horses are exceedingly well adapted for army use and surpass by far the European army horses. It is known that the French War Department, several years ago, imported American stock for army use; but, in spite of the cheapness, did not see itself clear to continue the importations. A great deal of that class of stock goes to England, whereas Germany has so far very little use for it. It is quite the contrary as regards heavy draft horses for farming purposes and for cart horses. A great deal has been done lately in America to improve this class, and this class has proved very profitable and efficient with us. The great Berlin breweries have lately utilized these horses to their entire satisfaction.

"To perfect the breeding of heavy horses America has preferred importing Clydesdales, and of late also Shires, Suffolks, Percherons, Belgian and Normandy stock. Mixing Oldenburg, East-Friesland and Holstein stock has also given great satisfaction. Horses of great usefulness have thus been produced and get very easily and quickly accustomed to our climate.

"For raising of the finer grade of stock thoroughbreds some Arabian and hackneys are employed, and excellent specimens of the breeding have been sent to Europe. It is well known how eagerly American trotters are sought after in Europe. There is no doubt but that before long the American working horse will be exported to Europe in far greater quantities, and our breeders are, therefore, given the advice to do all in their power to perfect the breeding of these heavy work-horses and thus meet the demands for such improved stock without having to look to America."

Some Notes on Windmills.

THE earliest trace, of which we have knowledge, of windmills for power, was among the Bohemians, as early as 718, but they were not extensively used until the 12th century.

About 1820, Coulomb made observations upon several Dutch windmills near Lille, in Flanders. They averaged about 66 feet in diameter and had four arms, the sails being about 6 feet wide. With a wind of about 15 miles per hour, it was said they would develop about $6\frac{1}{2}$ horse power, net.

History mentions a Dutch windmill having a wheel 150 feet in diameter. All these were heavy structures, and of small power considering their size; they are chiefly of historic interest, for they are being displaced by the improved American mills.

Mr. John Burnham, formerly of Connecticut, is the reputed "father of the American system." I am not aware that he is celebrated for inventions, but he engaged in the business, and followed it with such zeal in his early days that his name is necessarily associated with its early growth. Mr. Halliday was the first inventor of the centrifugal governor as applied to the American wheel. Mr. Halliday and Mr. Burnham were associated in the manufacture of those wheels at Batavia, Ill. A prominent characteristic of the American wheel is—the large number of narrow slats. In Halliday's wheel the speed was regulated by turning these slats into or out of the wind, and is called the "sectional" wheel.

The "Eclipse" windmill was patented in September, 1867, by Leonard H. Wheeler, who, after serving for 25 years as an Indian missionary, accidentally broke his arm, and then took up the invention of a windmill designed for pumping water and grinding corn for the Indians. In the first experiment the mill was destroyed by being blown down from its support by a gust of wind, which incident induced him to make the wheel "solid;" that is, the slats were secured rigidly to the arms of the frame, and adjustment secured by a lateral vane which forced the wheel "out of wind" as the force of the wind increased. He established a manufactory and organized a company, which in one year made some 5,000 mills. Mr. Wheeler died in 1872.

Numerous modifications of the "solid" and "sectional" wheels have since been made, and many manufacturers have engaged in their construction, but the greatest improvement appears to have been made by a graduate of the University of Michigan, who, after an acquaintance with the business, and as a result of a large number of experiments, constructed a solid wheel. The improvement consisted first in a simplification of design, and second in the substitution of steel for wood.

The light, open, portable trussed frame of steel for supporting the wheel is an American invention.

—The Mexican Secretary of War has contracted with James W. Grace for 1,200 American horses for the cavalry and artillery of the Mexican army. The animals must be at least $14\frac{1}{2}$ hands high. They will be purchased in California or Texas.

California Mohair.

ASTIR has been caused in England by a sample mohair fleece grown in California, and it is stated that if fleeces of the same uniform quality can be grown here in any amount the triumph of the United States as a mohair producer will be assured. United States Consul Meeker, at Bradford, Yorkshire, England, writes on this point as follows:

"There has been on exhibition at this Consulate for the past week an American grown mohair fleece forwarded to Bradford by Mr. C. P. Bailey, of San Jose, Cal. The fleece is that of a two-year-old graded doe, and is understood to have been grown on Mr. Bailey's ranch in Nevada. The quality of the hair has been the wonder of all who have seen it. It has been closely examined by several of the leading mohair dealers and importers, all of whom have expressed the highest opinion of it. One of them (Jonas Whitley, Esq., ex-Mayor of Bradford) said:

"I have now in my warehouse about \$200,000 worth of mohair, both Turkey and Cape, and I am entirely sincere when I state that there is not a better fleece in the lot. I will buy all the American mohair like that that may be offered me at the market price. Should it uniformly equal this fleece I do not know but what I would pay more than the market price. It is remarkable in being almost free from kemp, and I do not know that I have ever handled a fleece with so little kemp in it. The amount of noils is also less than usual, which is very important, as it leaves more weight in long staple to go into tops. I say unhesitatingly that the sample fleece before me is as good mohair as there is grown."

"All the experts who examined the fleece particularly complimented its lustre, the quality of the hair, the good length and the weight. The only criticism was (and this was not alluded to by all) there was a little deficiency in color, the ends of some of the clip being brown. It was pointed out, however, that this was not a serious difficulty, as in sorting or classing the brownish tips could be used for lots which were to be made into colored goods. The opinion of all was that the hair ranked fully equal with Cape and good Turkey average. The fleece sent weighed five pounds, and was alleged to have been picked at random, while Turkey fleeces do not average over three pounds in weight. The price of the mohair sent for inspection was 26 cents per pound when it left the United States. Cape firsts are now quoted at 28 cents and Turkey average at 31 cents per pound.

"The Bradford mohair trade is thoroughly surprised at the merit of this sample, saying that it has every quality of the best mohair with the trifling defect of the brownish tips. Breeders are strongly recommended to keep up the quality and color, and if such fleeces can be produced in quantities the triumph of the United States as a mohair producer is assured. It is stated that Mr. Bailey, who grew the sample fleece in question, has flocks averaging constantly 8,000 to 10,000 goats. Most of his product is marketed in New York and Boston. Many of his rams have been exported to South Africa, with splendid effect upon the strain of Angoras produced there."

Japan Buying Our Cotton.

THE industrial progress of Japan has given our Southern States a new customer for cotton, and one whose trade will be very valuable. There are now several agents in this country buying cotton for mills in Japan. One of these is stationed in New Orleans and another in Waco, Tex.

These agents will make large purchases this year, and it is their opinion that Japan will need 500,000 bales of cotton for its mills in 1897. The bulk of this will be bought in the South.

China exports very little cotton, and the demand for it at Chinese mills is increasing faster than the crop. The superiority of our cotton over that of India or China will give it the call in Japan, no matter how the production of Asiatic cotton may increase.

An additional demand for nearly 500,000 bales of cotton will be an excellent thing for the cotton-growing States of America, and our farmers may be morally certain of a price which will pay well for raising it.

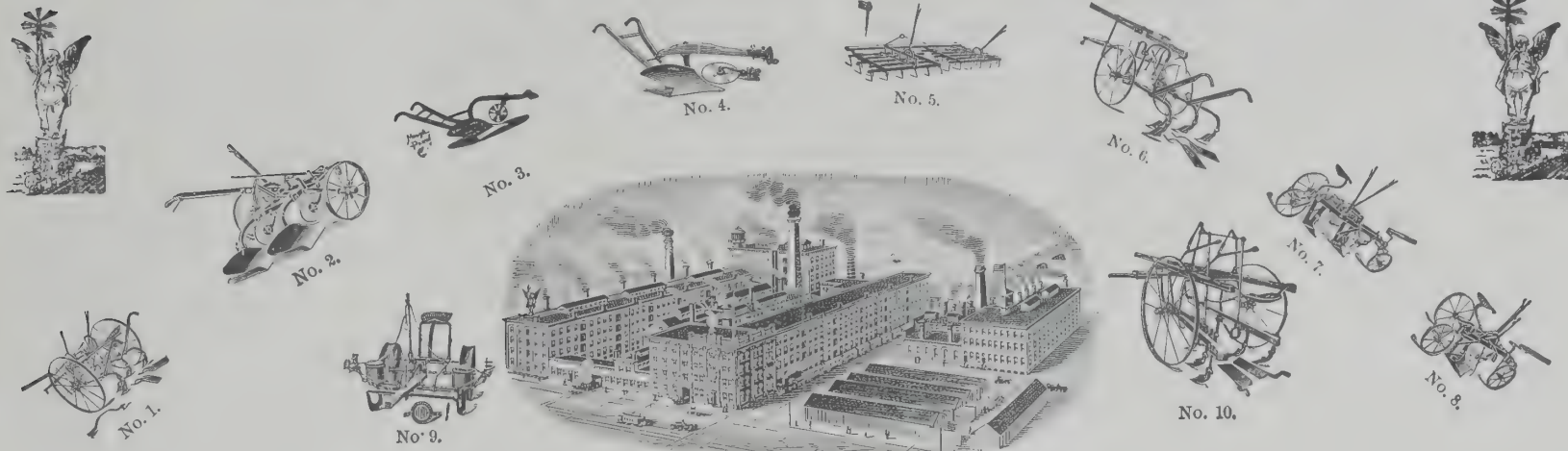
THE attention of our readers in all parts of the world who are interested in growing beans is directed to the advertisement of Mr. F. W. Miller, manufacturer of bean planting and harvesting machinery, to be found on page 46. These machines have been very highly spoken of by those who have had experience in using them, and foreign bean-growers should send for catalogue.

AS one of the many evidences of the great resources of the South the *Southern Farmer* says: "It is estimated that the exports of cottonseed meal and cake reach \$7,000,000 to \$8,000,000—this in addition to the oil produced and the meal consumed at home, which largely exceeds the exports. And yet during all the years prior to the inauguration of this industry but a small portion of the cotton seeds was used for fertilizing purposes, the great bulk of them being left to rot where they were thrown around the gin houses."

ONE of the most remarkable products of Nevada is a species of wood known as mountain mahogany, which, when dry, is as hard as boxwood, very fine grained, red in color, and of a very high specific gravity. It has been used for boxes for shaftings, and, in some instances, for slides and dies in quartz batteries. It burns with a blaze as long lasting as ordinary wood, but after going through what appears to be a regular combustion, it is found almost unchanged in form, being converted into a charcoal that lasts about twice as long as ordinary wood, giving out intense heat, greater than coal, all the time.

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U. S. A.**MOLINE PLOW COMPANY,**MOLINE, ILL.
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MANUFACTURERS OF THE BEST GRADES OF

Sulky, Gang, Wheel Walking and Walking Plows, Harrows, Disc Harrows, Planters, Seeders, Drills, Cultivators, Hay Rakes. Beet Machines. Etc.

No. 1. Dandy Combined Riding and Walking Cultivator.
No. 2. Wheel Walking Gang Plow, 24 inches.

No. 3. Steel Beam Plow with Rolling Coulter S. B.
No. 4. Wood Beam Plow with Rolling Coulter. F. O. B. NEW YORK.

No. 5. Steel Lever Harrow.
No. 6. New Western Cultivator.
No. 7. Flying Dutchman Gang Plow.

No. 8. Flying Dutchman, Jr., Sulky Plow
No. 9. Moline Champion Corn Planter
No. 10. Dutch Boy Riding Cultivator.

Foreign Agencies:

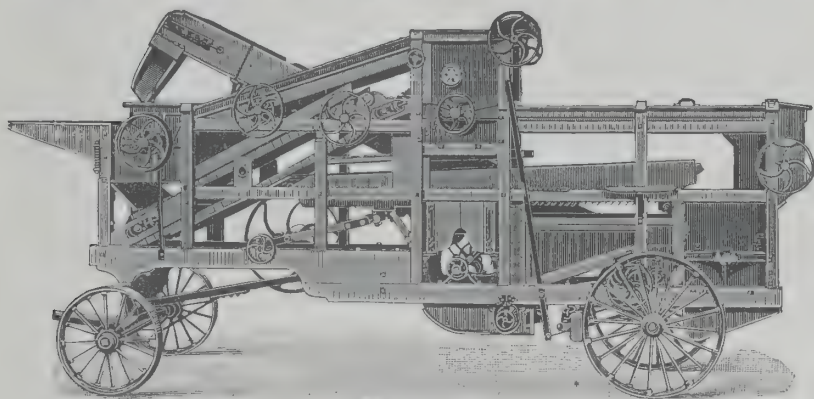
PEABODY & CO., New York City, for Continental Europe; Mess. MALCOMESS & CO., East London, Cape of Good Hope, Africa, for South Africa.
JOHN & JOSEPH DRYSDALE, Buenos Aires, South America.

Send for New Catalogue.

THE AULTMAN & TAYLOR MACHINERY COMPANY

MANSFIELD, OHIO, U. S. A.

MANUFACTURERS OF



**Thrashing Machines, Saw Mills,
STATIONARY, PORTABLE AND TRACTION ENGINES,
Horse Powers,
Tubular Boilers and Iron Tanks**

OF ALL KINDS AND SIZES FOR LOCOMOTIVES

Write us for DETAILS, PRICES and ANY DESIRED INFORMATION.

COFFEE MACHINERY.**The Monitor Coffee Separator and Grader**

Will make clean separations and grade in one operation.

The Monitor Coffee Milling Machine,

The most perfect miller for coffee ever offered. It will do the finest work on tender as well as hard coffees, and do it without waste or breakage.

These Machines are in successful operation in many of the largest Coffee Houses in this country, and are well worthy of investigation by Handlers of Coffees.

Can be bought direct from manufacturers or through any reliable exporter.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

Is SUPERIOR to "CORN STARCH," "ARROWROOT," "SAGO," Etc.

TRADE **MAIZENA** MARK
(DURVEA.)

Gold Medal Awarded
"MAIZENA."

This is a brand for a preparation from the choicest parts of Indian Corn, or Maize, making a healthy and nutritious article of food, and a most

DELICIOUS TABLE LUXURY.

ITS PURITY AND DELICACY ADAPT IT TO BEING USED IN A GREAT VARIETY OF EXQUISITE DISHES.

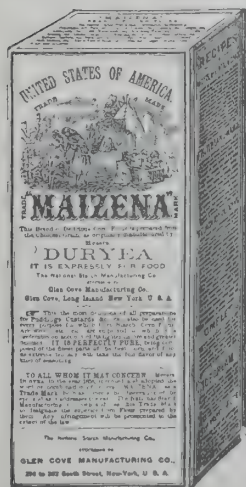
ENCOMIUMS TO ITS MERITS:

LONDON, 1862. "Supremely Excellent."
BRUSSELS, 1876. "Notably Excellent."
PARIS, 1887. "Perfection in Preparation."

CENTENNIAL, 1876. "Notably and Absolutely Pure."
PARIS, 1878. "Best Produced of Its Class."
FRANKLIN INSTITUTE. "Superior Merit."

Put up exclusively by THE NATIONAL STARCH MFG CO., successor to (MESSRS. DURVEA) GLEN COVE MANUFACTURING CO., N. Y. U. S. A., in 40 and 20-pound boxes, in packages of 1 lb. and ½ lb., and may be obtained through all importing houses of South and Central America, and the West Indies, and all export houses of the United States and Canada.

None GENUINE without "DURVEA" appearing on the face of Package.



The Export Lumber Trade.

THE exportation of wood and wooden ware, lumber, wooden boxes, staves and shingles from the United States to foreign countries, England and Canada chiefly, amounted in value last year to more than \$20,000,000, says the *New York Sun*. The importation of wood and wooden ware, lumber and wooden manufactures of all kinds, amounted to \$17,000,000, showing a small balance on the side of the United States. The chief demand this year has been for Southern pine, for which there has become a large foreign market, shown, men in the lumber trade think, by the fact that mills cutting for export are kept busy while the home trade is below normal.

A disposition to cultivate the foreign market more extensively is becoming evident among American mill men, many of whom have already established profitable trade relations with the other side of the Atlantic. Germany is a large consumer of American hard woods, but until recently the trade of that country had been largely supplied through the English markets. American walnut logs of good size and quality are readily salable both in London and Liverpool. A good deal of sawed Southern pine timber has been brought into stock at London. The prospect of any further cheap additions to the supply has been nullified by a scarcity of tonnage and an advance in States with more than 2,000 manufacturing establishments for sawmill products, 200 cooperage factories, and a factory product of furniture of more than \$15,000,000 a year. The cheapening of household furniture in the last few years is due, in largest measure, perhaps, to the work of the Michigan factories, though the furniture making factories of Indiana and Ohio are not far behind. The forest industries of the United States gives employment to more than 600,000 persons, of whom more than one-sixth are in the State of Michigan. The variety of uses to which wood is put in manufacture seems so great as to baffle enumeration.

Every one knows, of course, to how large an extent lumber enters into building operations, the manufacture of carriages, spokes, hubs, cars, barrels, boxes, trunks and furniture, but here are a few important uses: Matches, lead pencils, sounding boards, boats and oars, whips, shoe pegs, toys, cigar lighters, beehives, clothespins and wooden shoes. The hard woods of the Michigan peninsula and of California have a competitor in the States of the South, in which there is an enormous unused supply of most desirable hard wood to be procured at cheap rates, and under conditions that make its sale in other countries profitable, the rate of wages being low in the South, the freight charges from Southern towns not being excessive, and the lumber industries of the South having been developed by the general extension of the railroad system.

The Commercial Frauds and Their Legal Suppression.

IT has been well said by a leading manufacturer of the United States that "the profit of business lies in good will." This is true for several reasons. The majority of the public who purchase goods have little skill in the determination of the question of quality. They buy goods and find them satisfactory or they hear of them as satisfactory, and they buy goods bearing the brands and names of manufacturers upon whose integrity they rely and in which they have confidence, because of their faith in that integrity and the quality of the goods accompanying the brands with which they are familiar. It is also true in consequence of the fact that men who in regular course of trade buy constantly from an established house in consequence of good will therefor, pay without question the reasonable prices, including reasonable profits, which are charged them, and when they need goods again they go back to the same source to procure them, and this makes a continual flow of profitable trade for the manufacturer or dealer.

The brands, trademarks and names of manufacturers are the sign manual by which they stamp upon their goods or attach to them the designation of origin and their guarantee of genuineness and quality. The honest and skillful manufacturer who is determined to put upon the market only the goods of the highest quality, and who rightly expects to receive the good will of his customers and a continuation of their custom in consequence of the high quality and superior excellence of the goods which he manufactures, values at the highest estimate the integrity of his brands, names and trademarks, and the man who forges or unlawfully uses these brands and trademarks upon goods not manufactured or sold by the original maker or seller is doing to that manufacturer or seller an injury which is both irreparable and of incalculable extent, because a customer once disgusted and thrown off by the discovery of bad goods bearing an old and established brand seldom believes that he has been the victim of fraud, but charges the owner of the brand with an intentional lowering of the standard of his goods, and he spreads this report among his friends to an unlimited extent, and thus the owner of the brands is injured beyond power of rectification and to an extent over which he has no control.

In home markets, where the true reputation of the manufacturer is well known, the injury caused by an infringer is generally one to his trade only, but in foreign markets, where the reputation of the manufacturer is little, if at all, known, the fraudulent imitation of his brands and the placing of such forged brands upon false goods of inferior quality not made by him, not only injures him in the market for his goods, but injures the whole reputation of the nation as a producer of honest goods of a high quality.

Questions frequently arise in the United States in which there is room for an honest difference of opinion as to both title and infringement in trademark cases.

These are cases which are exclusively within the jurisdiction of the equity courts and in which exact justice is meted out with great liberality to the honest dealer who has built up for himself a valuable good will in this business. With

this class of cases there is little trouble; but the class of cases in which there is serious difficulty is that of the unblushing forger who, knowing the valuable reputation of the brands of an honest dealer, desiring fraudulently to reap to himself the benefit of some part of that good reputation, knowingly and fraudulently forges the brands, names and trademarks of the honest manufacturer of high reputation and places these brands upon inferior goods, puts them on the market and sells them as and for the goods of the manufacturer of high reputation—this class of infringer is worthy only of the most rigorous punishment which the criminal law can mete out to him for robbing the honest dealer, not only of the profits of his business, but also of that which every honest man values more than his property, that is to say, his good name.

In most of the States of this Union criminal statutes exist which are sufficient to permit the adequate punishment of forgers of this class, and some interesting cases have occurred in which infringers have been brought to justice and punished for their forgery.

Some three years ago we discovered that the brands of our clients, Bass, Ratcliff & Gretton, Limited, of Burton-on-Trent, England, the brewers of Bass' ale, were being forged and spurious goods sold under these forged brands in Boston, Mass., U. S. A. A very careful and elaborate investigation into the source of this forgery disclosed to us a very extensive scheme of fraud which had been practiced upon our clients by irresponsible people in New England. After a great amount of trouble in securing the necessary evidence for conviction these parties were tried by the State Criminal Court in the city of Boston and sentenced to the penitentiary of Massachusetts, where at hard labor they had time to repent of their sins. If the manufacturers of the world who sell their goods in this and other countries would be vigilant and persistent in the pursuit and punishment of these fraudulent dealers the practice could be broken up or made so unprofitable to the forger as to grant almost a complete immunity against this kind of commercial fraud.

The law of most nations is sufficiently severe in its provisions to enable manufacturers to punish such forgeries. It only requires watchfulness and united action to accomplish this result, but that which is everybody's business is nobody's business, and unless the National Boards of Trade or National Associations of Manufacturers will take the matter up and, by employing a competent person, watch the markets of the world for such forgeries, frequent cases of infringement and great loss to individuals will inevitably result for long periods of time without discovery. A properly constituted officer in touch with all the consuls of the United States could keep a watchful eye on the markets of the world and easily detect spurious goods bearing forged brands and be in a position to suppress the forgery as soon as it appears and before it has had time to work any serious mischief to American manufacturers.

ARTHUR STEUART,
25 Pine Street, New York.

NEW YORK, Oct. 21, 1896.

Editor of THE AMERICAN EXPORTER:

DEAR SIR—As you are more than likely aware, the government of the Republic of Guatemala have decided to open an international exposition, called the Central American and Foreign Exhibition, to be held in the city of Guatemala, beginning March 15, 1897, and ending July 15, 1897.

Your valued paper being so closely identified with the shipping interests of the United States, and as the Panama Railroad Steamship Company have advised me that as the large amount of extra freight which they may be called upon to handle in this connection, may, if such freight be held back until the last moment, interfere with their being able to make delivery in sufficient time.

The object of this letter is to call the attention of American exhibitors to the importance of early shipping their goods, so as to preclude any possible chance of their arriving too late to exhibit.

Believe me, sir, with the assurances of my highest consideration, yours,
JOAQUIN YELA,

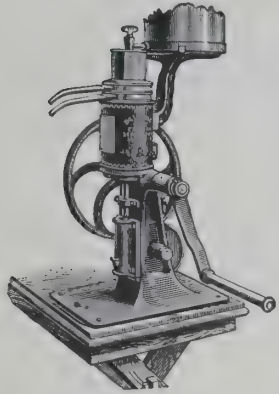
Consul General of Guatemala, New York.

CLARK-HUTCHINSON COMPANY made lately the first shipment of an order which was received from a large retailer in Dresden, Germany. The goods purchased by this German dealer range in price from 60c. to \$2 a pair, and include men's, women's and children's footwear. It is interesting also to note the fact that they come from Clark-Hutchinson Company's regular stock, and are made on exactly the same lasts as they use in their home trade.—*Boot and Shoe Recorder*.

FOR canning and preserving choose always the very best fruit. It should be thoroughly ripe, but firm and sound. In peeling be very careful to cut out all bruised spots; reject whatever has the least trace of decay; it is ripe for fermentation and may ruin the whole lot. To keep apples, pears and peaches firm and well colored, drop each one, as the rind comes off, into clear lime water and let stay till all are finished. Take out upon a sieve and rinse by pouring clear water through. About one-half pound of sugar to each quart of fruit will be enough, the sugar to be added five minutes before the fruit is done cooking.

—A firm has been located at Suisun, Cal., U. S. A., for the purpose of shipping dried fruits to Germany, and a large number of persons have been given employment. Over 10,000 25-pound boxes have already been shipped and the firm has purchased many tons of dried fruit for future shipment. This industry will enable orchardists to sell their produce at home in preference to shipping on a commission, and at the same time afford a new source of employment.

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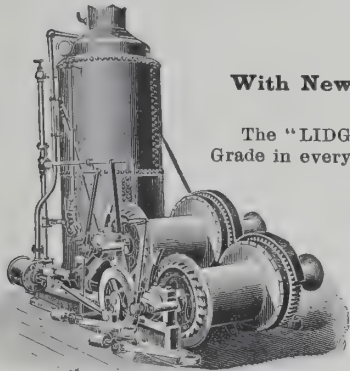
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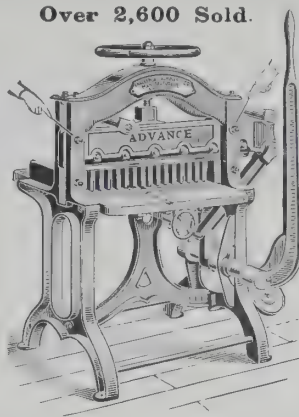
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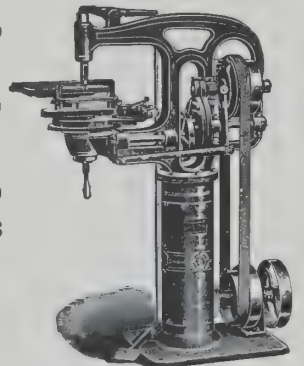
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3543, 3545, 3547, 3549, 3551, 3553, 3555, 3557, 3559, 3561, 3563, 3565, 3567, 3569, 3571, 3573, 3575, 3577, 3579, 3581, 3583, 3585, 3587, 3589, 3591, 3593, 3595, 3597, 3599, 3601, 3603, 3605, 3607, 3609, 3611, 3613, 3615, 3617, 3619, 3621, 3623, 3625, 3627, 3629, 3631, 3633, 3635, 3637, 3639, 3641, 3643, 3645, 3647, 3649, 3651, 3653, 3655, 3657, 3659, 3661, 3663, 3665, 3667, 3669, 3671, 3673, 3675, 3677, 3679, 3681, 3683, 3685, 3687, 3689, 3691, 3693, 3695, 3697, 3699, 3701, 3703, 3705, 3707, 3709, 3711, 3713, 3715, 3717, 3719, 3721, 3723, 3725, 3727, 3729, 3731, 3733, 3735, 3737, 3739, 3741, 3743, 3745, 3747, 3749, 3751, 3753, 3755, 3757, 3759, 3761, 3763, 3765, 3767, 3769, 3771, 3773, 3775, 3777, 3779, 3781, 3783, 3785, 3787, 3789, 3791, 3793, 3795, 3797, 3799, 3801, 3803, 3805, 3807, 3809, 3811, 3813, 3815, 3817, 3819, 3821, 3823, 3825, 3827, 3829, 3831, 3833, 3835, 3837, 3839, 3841, 3843, 3845, 3847, 3849, 3851, 3853, 3855, 3857, 3859, 3861, 3863, 3865, 3867, 3869, 3871, 3873, 3875, 3877, 3879, 3881, 3883, 3885, 3887, 3889, 3891, 3893, 3895, 3897, 3899, 3901, 3903, 3905, 3907, 3909, 3911, 3913, 3915, 3917, 3919, 3921, 3923, 3925, 3927, 3929, 3931, 3933, 3935, 3937, 3939, 3941, 3943, 3945, 3947, 3949, 3951, 3953, 3955, 3957, 3959, 3961, 3963, 3965, 3967, 3969, 3971, 3973, 3975, 3977, 3979, 3981, 3983, 3985, 3987, 3989, 3991, 3993, 3995, 3997, 3999, 4001, 4003, 4005, 4007, 4009, 4011, 4013, 4015, 4017, 4019, 4021, 4023, 4025, 4027, 4029, 4031, 4033, 4035, 4037, 4039, 4041, 4043, 4045, 4047, 4049, 4051, 4053, 4055, 4057, 4059, 4061, 4063, 4065, 4067, 4069, 4071, 4073, 4075, 4077, 4079, 4081, 4083, 4085, 4087, 4089, 4091, 4093, 4095, 4097, 4099, 4101, 4103, 4105, 4107, 4109, 4111, 4113, 4115, 4117, 4119, 4121, 4123, 4125, 4127, 4129, 4131, 4133, 4135, 4137, 4139, 4141, 4143, 4145, 4147, 4149, 4151, 4153, 4155, 4157, 4159, 4161, 4163, 4165, 4167, 4169, 4171, 4173, 4175, 4177, 4179, 4181, 4183, 4185, 4187, 4189, 4191, 4193, 4195, 4197, 4199, 4201, 4203, 4205, 4207, 4209, 4211, 4213, 4215, 4217, 4219, 4221, 4223, 4225, 4227, 4229, 4231, 4233, 4235, 4237, 4239, 4241, 4243, 4245, 4247, 4249, 4251, 4253, 4255, 4257, 4259, 4261, 4263, 4265, 4267, 4269, 4271, 4273, 4275, 4277, 4279, 4281, 4283, 4285, 4287, 4289, 4291, 4293, 4295, 4297, 4299, 4301, 4303, 4305, 4307, 4309, 4311, 4313, 4315, 4317, 4319, 4321, 4323, 4325, 4327, 4329, 4331, 4333, 4335, 4337, 4339, 4341, 4343, 4345, 4347, 4349, 4351, 4353, 4355, 4357, 4359, 4361, 4363, 4365, 4367, 4369, 4371, 4373, 4375, 4377, 4379, 4381, 4383, 4385, 4387, 4389, 4391, 4393, 4395, 4397, 4399, 4401, 4403, 4405, 4407, 4409, 4411, 4413, 4415, 4417, 4419, 4421, 4423, 4425, 4427, 4429, 4431, 4433, 4435, 4437, 4439, 4441, 4443, 4445, 4447, 4449, 4451, 4453, 4455, 4457, 4459, 4461, 4463, 4465, 4467, 4469, 4471, 4473, 4475, 4477, 4479, 4481, 4483, 4485, 4487, 4489, 4491, 4493, 4495, 4497, 4499, 4501, 4503, 4505, 4507, 4509, 4511, 4513, 4515, 4517, 4519, 4521, 4523, 4525, 4527, 4529, 4531, 4533, 4535, 4537, 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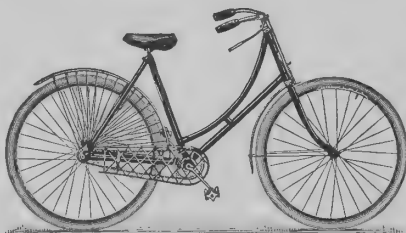


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This is our standard men's wheel and is suitable for all kinds of road use. It is built in three heights of frames, 22½, 24 or 26½. The wheels are 28 inches diameter; 26 inches will be furnished if preferred. Gear, 68; options, 60, 63, 72, 73 or 80; cranks, 6½ inches, 7 inches if preferred. If not otherwise specified, all machines will be fitted with Hartford or Morgan & Wright tires. All wheels are supplied with tool bag, tools and repair kit. Regular finish, black enamel, nickel trimmings. If a lighter wheel than the above is desired, order should specify Model 21, which will weigh with light road equipment about 20½ lbs.

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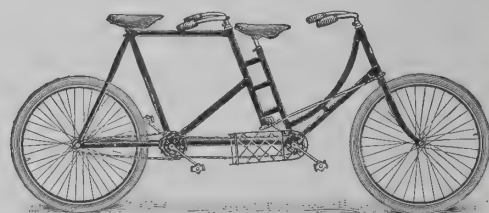
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Our ladies' wheels are built in three heights of frames, 20½, 22½ or 24 inches. 20½ inches is standard and will be shipped if not otherwise specified. Wheels, 28 inches, can be furnished, with 26 if preferred. Regular gear, 68; options, 56, 60, 68 or 72; cranks, 6 inches throw. The weight is about 24 lbs.

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Our tandems are also built with double diamond frame for use of men riders. Wheels are 28 inches; height of frame, 24 inches; ladies' forward frame, 20½ inches. Gear, 68; can fit with 72, 76 or 80, if desired.

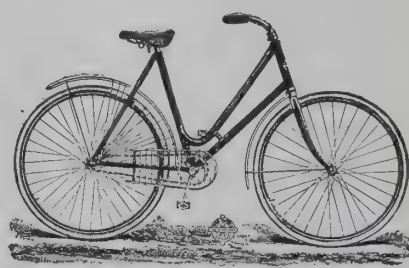
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DEVOTED TO THE FOREIGN TRADE IN BICYCLES AND SUPPLIES.

The English and American Cycle Trade.

A QUESTION is continually being asked as to whether the prices of cycles will not drop, and the question is generally followed by some remarks on the cheapness of iron and steel, says the *London Telegraph*. A visit to a high-class factory would go far to explain the reason for the apparently high prices of first-class cycles. Considered first the parts which join together the tubes of the frame; these can be made either of malleable castings or of steel stampings. Now, a malleable casting, if perfect, is probably as good as a steel stamping, but it is not to be depended on. It may have a flaw somewhere, generally caused by an air bubble in the mettle, which cannot be discovered. It may happen that this particular flawed casting does not play a very important part in the economy of the machine; if so, all may be well. But it may also happen to be one of the chief bearings of the machine, and disaster may arise through it. Therefore, steel stampings are used in the best machines because they can be trusted. There is every temptation to use the casting, for it costs only 3d. or 4d. per pound, and it requires very little work upon it before it is ready for use.

And moreover, as very little metal is cut away from it, there is much more usable material in the pound of castings than of stampings. The steel bars of these latter will cost about 9d. per pound, and from the bars they have to be struck out into the requisite shapes by massive stamps. The "blank," as it is called, for a hub, for instance, will weigh about six pounds; it is passed through ingenious and expensive machinery and subjected to skilled labor, and the finished article will weigh about five ounces. When it is considered that a similar process is followed for many other parts of the bicycle, it will readily be seen that, although a fairly reliable bicycle can be bought for about £10 or £12, it is not surprising that for a machine of the highest class, with the watch-like accuracy and perfect finish which is now attained, £18 or £20 should be asked. Some makers compromise by using malleable castings for the less important parts; but a few of the best makers do not use a scrap of malleable metal in their machines. On the question of the price of cycles it has been pertinently asked why it is, if English prices have been inflated, that foreign makers, who have long been building some excellent machines, did not come over and undersell the home manufacturers. There was no tariff to stop him, and patriotism has not prevented the Englishman in the case of other articles from buying foreign wares if he could get them cheaper than, and as good as, his countrymen's produce.

There is, however, some reason to anticipate that the prices of cycles will fall somewhat next year. In the first place, the charges have been undoubtedly excessive in the past season, owing to the enormous "boom" which flooded the factories with orders which they could not complete. Machines could not be turned out quickly enough, material was not to be had, and, consequently, eager purchasers had to take what they could get and pay a high price for it. Secondly, as a natural result, newcomers flocked into the trade; "small" men have done business which have caused them to prepare for bigger trade next year; while the old-fashioned firms, inundated with demands, have launched out into all sorts of extensions, and have made contracts to enable them to secure largely increased outputs for 1897. Thirdly, there is the foreign invasion, chiefly American. The Americans had their boom a year or two ago, and built huge factories; they have evidently had plenty of stock on hand, and they have seen their opportunity to establish a trade by supplying those whom the English manufacturers could not satisfy. They have got a firm foothold now, not only here, but abroad, in parts where the Englishman might have contested the position with them if he had been swamped by his prosperity. They will certainly have to be reckoned with as factors in next year's trade; and as they are preparing for increased output also, unless the "boom" not only continues, which it will almost certainly do, but also increase very much, which is not so sure to happen, there is a great possibility of our being overstocked. In that case, prices will fall, although the man who is waiting to buy a first-class machine for about £8 or £9 will have to wait some years yet.

It has been urged that American cycles are too light and that, in consequence, robust Britishers should avoid them. A gentleman weighing 36 stones can be seen most days wheeling along the London streets on a 28-pound cycle. He is 6 feet 5½ inches, and is 23 years of age. He is the representative of an American firm of cycle manufacturers, and thus combines in his own person a riding advertisement and a business manager. We see no help for it, American cycles must possess some stability. This is a heavy blow indeed!—*London Hardwareman*.

A Big Demand Abroad for American-Made Bicycles.

THE following exports of bicycles and bicycle merchandise were made from American ports during the eight months of 1896, ending with August, which is the latest period to which the official figures have been compiled by the Treasury Department:

The exports of bicycles from the United States to the United Kingdom in August reached the valuation of \$128,575, while the exports of the eight months ending August amounted to \$915,257. The August exports of bicycles of this country to Germany were worth \$29,156, and for the eight months ending with August, \$187,556. In August \$11,912 worth of American bicycles were shipped to France, and during the eight months ending with August \$109,653 was the value of outgoing shipments. All other countries of Europe bought American bicycles to the value of \$44,603. The same countries during the eight months ending in August made purchases to the value of \$312,132.

The August shipments to British North America reached \$16,485, and during the eight months ending with August, \$492,118. Mexico bought bicycles from the United States to the value of \$8,914, and during the eight months ending in August to the value of \$31,866. Central America and British Honduras received bicycles from the United States in August worth \$4,149, and during the eight months ending with August, \$43,789. The falling off characterizes the August shipments of bicycles to Cuba, the valuation being only \$18, while during the eight months ending with August the amount was \$4,497.

Bicycle shipments during August to Porto Rico amounted to \$889, and \$7,318 for the eight months ending with August. The August shipments of bicycles to Santo Domingo from the United States were worth \$29, and during eight months ending with August, \$283. The shipments of American bicycles during August to other West Indies and Bermuda are highly satisfactory, considering the circumscribed territory in which the goods entered. The August shipments were worth \$5,479, and the shipments for the eight months ending with August, \$24,235. Bicycles from the United States were shipped to Argentina in August to the value of \$7,991, which is an important increase over the shipments in recent months. The eight months ending with August only making a total of \$10,273. The bicycle shipments to Brazil were not so large in August as might have been expected from a country like that, the value reaching only \$2,910, and only \$15,636 for the eight months ending with August. The bicycle shipments in August from the United States to Colombia were worth \$4,244, and during the eight months ending with August, \$13,470.

Bicycles from the United States to the value of \$7,007 were shipped to other South American countries, and to the value of \$20,614 during the eight months ending with August.

It remains to be seen whether the recent visit of Li Hung Chang to the United States will increase the exports of bicycles from the United States to China, or not. But it is interesting to note that during the month of August, \$2,650 worth of American-made bicycles were sent to that country, which is an important increase over the previous month. As during the eight months ending with August the total footed up only \$5,856.

The most interesting feature of these official statistics is the steady development of American bicycle entries in British Australasia. The shipments during the month of August reached a valuation of \$52,215, and the shipments during the eight months ending with August amounted to \$179,568. In August, \$2,143 worth of American bicycles were exported to the British and East Indies, showing a notable increase over previous months, only \$3,830 worth having been exported thither during the eight months ending with August. The August shipments of American bicycles to other countries in Asia and Oceania amounted to \$12,861, which made the shipments for the eight months' period closing with August amount to \$54,416. The African purchases of American bicycles in August reached \$8,665, while the exports during the eight months ending with August were worth \$16,893.

—A change in cycle construction almost as radical and revolutionary as the safety and pneumatic tire is about to be made. The rumor that one of the oldest, largest and most conservative bicycle-building concerns in the country is to be the parent of the innovation has created a profound sensation among riders generally, and cycle manufacturers particularly. The rumor is true. A leading New York company will put out a chainless bicycle next year, and two of the models for 1897, one for men and one for women, will be operated by bevel gears instead of the usual chain and sprocket.

A Chainless Cycle.

AN Allegheny, Pa., man, Charles S. McIntire, has for a long time been working on a chainless bicycle, and is about to place on the market the result of his labor. The mechanism is of two steel driving rods, connected with the rear axle, running along each side of the rear wheel, the front ends of which are connected with driving apparatus, which is incased in a small dust-tight bracket. A case-hardened steel ball-bearing belt (something entirely new and unknown in mechanics before) passes over two wheels, incased in the dust-proof box which is filled with lubricant, so that the entire mechanism runs continually in a lubricant bath. There are absolutely no joints or parts exposed to the dust, no skirt guards being needed, as there is nothing to catch or soil the clothing. There is no more twisting or buckling of the frame, as the wheel is propelled equally from both sides, the power being taken directly from the pedal cranks to the rear axle of the bicycle. In place of getting two impulses of power to each pedal revolution, as in the ordinary chain wheel, the power is applied constantly, there being absolutely no lost motion in the pedals, thus giving the rider perfect control of the machine, which can be propelled or stopped with one-third the effort of an ordinary chain machine.

Latest Motor Cycle.

BEFORE long people may apparently expect to see the horseless carriage a practical, every-day affair. A Connecticut man has advanced so far in the study of this means of travel that he is ready to equip any sort of vehicle with a motor, using either electricity, gasoline or compressed air as the power. His latest invention is a motor cycle built for two, in which the power is applied to the front wheels instead of the rear wheels, as has been the custom heretofore. The invention is a very simple one, with no loss of energy between the motive power and the driving wheels. The latest machine carries two sets of pulleys which regulate the speed. One set of pulleys is larger than the other. The small set is used in hill climbing, where low speed but high power is required. At the top of the hill a turn of the hand shifts the pulleys and the speed is increased at once. The motor cycle is equipped with brakes and can be stopped quickly. The whole machine is controlled by a lever which makes and breaks the connection between the motor and the driving wheels. The machine is constructed on the same principle as the bicycle. With gasoline as the motive power the whole outfit weighs 200 pounds. With electrical equipment it is twice as heavy.—*Herald, Grand Rapids, Mich.*

Anglo-American Cycle Trade.

ACCORDING to reports from United States Consul Parker at Birmingham, Eng., the trade of that place with the United States in bicycle materials is steadily declining and promises to terminate altogether in a short time. As for bicycles, the trade with the United States has completely stopped, and not one was shipped this year. On the other hand, some American machines were sold in Birmingham, and the Consul thinks the sales may be extended if the prices are slightly lowered. The Birmingham tube factories, however, are turning out vast quantities of bicycle tubing for the continental markets, and, confident of retaining their hold on the colonial trade for bicycles, are enlarging their plants in the expectation of making no less than a million wheels next year.

Naked Savages to Go Bicycling.

THE naked savages of the South Pacific Islands are to taste the delights of cycling. Oscar Pomare, Prince of the Island of Bora-Bora, one of the largest of the Society group, having been educated in Europe and learned to cycle himself, is returning with a dozen machines, which he intends to introduce among the aristocracy of Bora Bora, to whom he will set the fashion as a wheelman. Here is an idea for the enterprising British trader. If the nigger will not buy our cotton goods and blankets as much as before, and looks askance upon our offers of cheap Bibles and hymn books, perhaps he will buy our machines. If the subject races of mankind were once bitten with the cycling craze, what tons upon tons of ivory and shiploads of oil and fibre might be obtained in exchange for a few pneumatics. It is, perhaps, unnecessary to say that Prince Pomare is not taking English machines out with him. His wheels are of the American make.—*St. James Budget.*

DR. LEONARD WHEELER, of Worcester, Mass., U. S. A., recently spent some six weeks in England, during which time he rode about 500 miles on his American wheel. He says: "The bicycle industry in England is an amazing one. You can see every sort of contrivance on the streets, including numbers of bicycles of ancient pattern. There are some of the old high wheels to be seen there. The English wheels are not so well made, not so strong, durable or as good looking as American wheels. While most of the wheels we saw were of English make, we noticed that several large American manufacturers have agencies in London and were informed that American wheels were growing in popularity and would be sold more extensively next season. The English machines have low seats and high handlebars and the riders look awkward. They carry mud guards, which also look awkward and make the machine look heavy. The common riders have brakes on their machines, although racers do not. I let an Englishman try my wheel and he liked it very much. Our wheels are jauntier and more stylish, while many of theirs are not firm."

—There are said to be 200,000 bicycles owned by private individuals in New York City.

American Wheels in Australia.

HERE is a frank acknowledgment of the consideration which the American wheel is receiving from Australian critics: "In Australia, American machines were practically unknown a year ago, and the first sample of an American machine was looked upon as a novelty; now American machines are flooding the markets, and they not only reach our port but find a place on the road immediately. It is surprising to notice how great is the number of Yankee machines ridden, and they seem to have hit the popular taste right away. Whether, as a class, they will stand the wear and tear of our roads has yet to be proved; but so far as popularity is concerned, there can be no two opinions. The representatives of the British firms have quickly realized this, and reference to our advertising columns will show that most of them carry a line of American wheels.—*Australian Cyclist.*

And the Englishmen talk about Americans putting out spurious imitations of their goods!

IT is said that cycles for 1897 will be up to date in every way. Many American manufacturers have had agents in Europe to find out if their competitors over there have any inventions of real merit that have not already been introduced here, and, on the other hand, European manufacturers have not been idle, for they have been watching with much interest the makers in this country who, during the past year, made such inroads upon their home trade. The Englishmen were quick to notice the increased favor with which the American wheel has been looked upon on their side of the water, and they want to know the reason therefor. The American wheel is much lighter than its cousin across the water, and nobody need be surprised to hear that the English makers have decided to make lighter and less cumbersome bicycles for next year.

New Consular Order.

FOR years past foreign shippers and domestic importers have, until recently, protested in vain against what they have felt to be an injustice in being compelled to pay the exorbitant fees demanded by United States consuls. These fees, however, have made some of the positions highly attractive and remunerative. At last an order has been issued by Secretary of State Olney abolishing the abuse, if such it may be called.

By this order consular officers are prohibited from receiving the whole or any part of the fees charged by a commissioner or other officer for administering oaths to invoices, from receiving anything as a gratuity or otherwise on account of the administration of such oaths, and from being in any way, either directly or indirectly, pecuniarily interested in such fees.

In some of the English ports these fees have aggregated large sums annually, and have made the consulates there located among the best paying places in the gift of the President. The new amendments to the consular regulations, which will take effect at once, will be particularly gratifying to those who have heretofore paid these fees, while protesting against them as unwarranted and never contemplated under the law governing the compensation of this class of officials. The Treasury Department has long tried to do away with this tax on free list or specific duty articles in invoices, but in the absence of any statutory enactment has found it impossible. The State Department, however, has the power to make or amend consular regulations, consequently Secretary Olney issued this order.

An idea of the degree to which it will affect the consuls is seen in the fact, as stated, that the loss to those officials in England alone will be more than \$200,000. The system is one that was never contemplated in organizing the consular service, but has developed and has frequently given occasion for much scandal.

Figures That Mean Business.

THE heavy increase in the sales of Fall River prints last week is accompanied by a decrease of \$1,447,000 in the week's importations of foreign dry goods. This is not an isolated incident. It is in line with the trade movement of the entire year. We are decreasing our imports heavily and at the same time making a marked increase in exports.

In cottons of all kinds our imports for the first eight months this year were \$18,722,000, against \$20,647,000 for the same period of 1895. Woollens for the first eight months this year show \$29,533,000, against \$42,679,000 for the corresponding period of 1895. Taking all imports together we have a reduction from \$535,737,000 for eight months of 1895 to \$471,229,000 for eight months this year, with an increase in exports for the same periods from \$489,360,000 in 1895 to \$567,266,000 in 1896. These figures represent the most significant facts of the existing business situation. It is hard to see how they could be more favorable in their indications of a continued influx of cash from abroad. They are non-partisan, for they have nothing to do with politics. They mean business. And it will be much better business.—*New York World.*

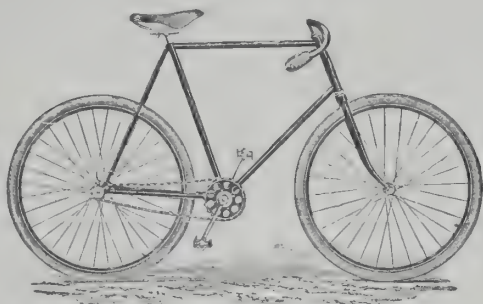
MR. H. C. CARPENTER, United States Commercial Agent at Furth, Bavaria, says in one of his official reports: "It is freely admitted by the Germans that American machinery, tools, furniture and many other articles are the best, and the word 'American' attached to any article is taken to signify superiority. And contrary to the general belief in this country such articles of German make are not produced and sold so cheaply as to render American competition unprofitable. Indeed many articles are sold in Bavaria at prices double those for which much better ones can be purchased in the United States."

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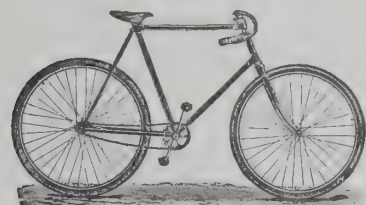
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FRAMES—22, 24, 26 inches high; seamless steel tubing, large diameter; reinforced joints, 43 inch wheel base.

WHEELS—28 inches, wood or steel rims; piano-wire swaged tangent spokes nicked, barrel hubs turned from bar steel; M. & W. tires.

BEARINGS—Dust-proof; large balls; special steel cones, oil tempered; steel-ball races, tempered and polished.

HANDLE BARS—Drop, high, Ramshorn, steel or wood; cork grips.

GEAR—64, 68, 72, 76, 80; forged sprockets, hardened; Cranks, 6½ inch, forged; Chain, ½ inch, hardened.

FINISH—Black or colored enamel, highly polished; nickeling done on copper.

EQUIPMENT—Saddle, pedals, tool bag, tools and tire-repair outfit.

An extra set of Bearing Cones furnished with each Wheel for Export.



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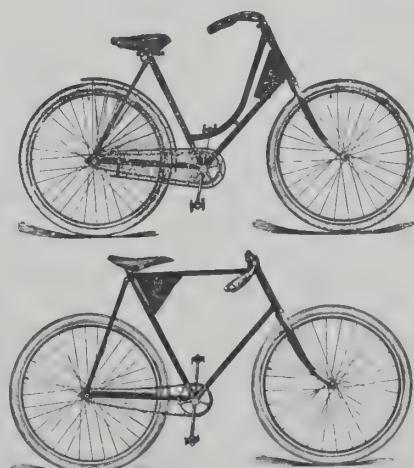
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FOREIGN WEIGHTS AND MEASURES WITH AMERICAN EQUIVALENTS.

To assist the readers of THE AMERICAN EXPORTER in their correspondence with American manufacturers, we print below tables of weights and measures and their American equivalents:

FOREIGN WEIGHTS AND MEASURES.

Prepared by the Bureau of Statistics, Department of State, U. S. A.

Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.	Denomina- tions.	Where used.	American equivalent.
Almude.....	Portugal.....	4.422 gallons.	Fanega (dry) ..	Chile.....	2.575 bushels.	Oke.....	Turkey.....	2.85418 pounds.
Ardeb.....	Egypt.....	7.6907 bushels.	do.....	Cuba.....	1.599 bushels.	do.....	Hungary, Wallachia	2.5 pints.
Are.....	Metric.....	0.02471 acre.	do.....	Mexico.....	1.54728 bushels.	Pic.....	Egypt.....	21 1/4 inches.
Arabe.....	Paraguay.....	25 pounds.	do.....	Morocco.....	Strike faega 70 lbs.; full fanega 118 lbs.	Picul.....	Borneo and Celebes.	135.64 pounds.
Arratel or libra.	Portugal.....	1.011 pounds.	do.....	Uruguay (double) ..	7.776 bushels.	do.....	China, Japan and Sumatia.	139 1/2 pounds.
Arroba (dry) ..	Argentine Republic	25.3175 pounds.	do.....	Uruguay (single) ..	3.888 bushels.	do.....	Java.....	135.1 pounds.
do.....	Brazil.....	32.38 pounds.	do.....	Venezuela.....	1.599 bushels.	do.....	Philippine Islands	139.45 pounds.
do.....	Cuba.....	25.3664 pounds.	do.....	Spain.....	16 gallons.	do.....	(hemp).	
do.....	Portugal.....	32.38 pounds.	Fanega (liquid)	Egypt.....	1.03 acres.	do.....	Philippine Islands	140 pounds.
do.....	Spain.....	25.36 pounds.	Frail (raisins) ..	Spain.....	50 pounds.	Pie.....	Argentine Republic	0.9478 foot.
do.....	Venezuela.....	25.4024 pounds.	Frasco.....	Argentine Republic	2.5096 quarts.	do.....	Castilian.....	0.91407 foot.
Arroba (liquid).	Cuba, Spain and Venezuela.	4.263 gallons.	do.....	Mexico.....	2.5 quarts.	Pik.....	Turkey.....	27.9 inches.
Arshine.....	Russia.....	28 inches.	Fuder.....	Luxemburg.....	264.17 gallons.	Pood.....	Russia.....	36.112 pounds.
Arshine (square)	do.....	5.44 square feet.	Garnice.....	Russian Poland ..	0.88 gallon.	Pund (pound) ..	Denmark, Sweden.	1.102 pounds.
Artel.....	Morocco.....	1.12 pounds.	Gram.....	Metric.....	15.432 grains.	Quarter.....	Great Britain.....	8.252 bushels.
Baril.....	Argentine Republic and Mexico.	20.0787 gallons.	Hectare.....	do.....	2.471 acres.	Quintal.....	London (coal) ..	36 bushels.
Barrel.....	Malta (customs) ..	11.4 gallons.	Dry.....	do.....	2.838 bushels.	do.....	Argentine Republic	101.42 pounds.
do.....	Spain (raisins) ..	100 pounds.	Liquid.....	do.....	26.417 gallons.	do.....	Brazil.....	130.06 pounds.
Berkovet.....	Russia.....	361.12 pounds.	Joch.....	Austria-Hungary ..	1.422 acres.	do.....	Castile, Chile, Mex- ico and Peru.	101.61 pounds.
Bongkal.....	India.....	832 grains.	Ken.....	do.....	4 yards.	do.....	Greece.....	123.2 pounds.
Bonw.....	Sumatra.....	7,096.5 square metres.	Kilogram (kilo)	Metric.....	2.2046 pounds.	do.....	Newfoundland (fish)	112 pounds.
Bu.....	Japan.....	0.1 inch.	Kilometre.....	do.....	0.621376 mile.	do.....	Paraguay.....	100 pounds.
Butt (wine) ..	Spain.....	140 gallons.	Klafter.....	Russia.....	216 cubic feet.	do.....	Syria.....	125 pounds.
Caffiso.....	Malta.....	5.4 gallons.	Kota.....	Japan.....	5.13 bushels.	do.....	Metric.....	220.46 pounds.
Candy.....	India (Bombay) ..	529 pounds.	Korree.....	Russia.....	3.5 bushels.	Rottle.....	Palestine.....	6 pounds.
do.....	India (Madras) ..	500 pounds.	Last.....	Belgium, Holland ..	85.134 bushels.	do.....	Syria.....	5 1/2 pounds.
Cantar.....	Morocco.....	113 pounds.	do.....	England (dry malt) ..	82.52 bushels.	Sagen.....	Russia.....	7 feet.
do.....	Syria (Damascus) ..	575 pounds.	do.....	Germany.....	2 metric tons (4,480 pounds.)	Salm.....	Malta.....	490 pounds.
do.....	Turkey.....	124.7036 pounds.	do.....	Prussia.....	112.29 bushels.	Se.....	Japan.....	3.6 feet.
Cantaro, Cantar	Malta.....	175 pounds.	do.....	Russian Poland ..	11 1/2 bushels.	Seer.....	India.....	1 pound 13 ounces.
Carga.....	Mexico and Salvador	300 pounds.	do.....	Spain (salt) ..	4.760 pounds.	Shaku.....	Japan.....	10 inches.
Catty.....	China.....	1.333 1/3 (1 1/3) pounds.	League (land) ..	Paraguay.....	4.633 acres.	Sho.....	do.....	1.6 quarts.
do.....	Japan.....	1.31 pounds.	Li.....	China.....	2.115 feet.	Standard (St. Petersburg).	Lumber measure..	165 cubic feet.
do.....	Java, Siam, Malacca	1.35 pounds.	Libra (pound) ..	Castilian.....	7.100 grains (troy).	Stone.....	British.....	14 pounds.
do.....	Sumatra.....	2.12 pounds.	do.....	Argentine Republic	1.0127 pounds.	Suerte.....	Uruguay.....	2,700 cuadras (see cua- dra).
Centaro.....	Central America ..	4.2631 gallons.	do.....	Central America ..	1.043 pounds.	Tael.....	Cochin China.....	590.75 grains (troy).
Centner.....	Bremen, Brunswick	117.5 pounds.	do.....	Chile.....	1.014 pounds.	Tan.....	Japan.....	0.25 acre.
do.....	Darmstadt.....	110.24 pounds.	do.....	Cuba.....	1.0161 pounds.	To.....	do.....	2 pecks.
do.....	Denmark, Norway ..	110.11 pounds.	do.....	Mexico.....	1.0145 pounds.	Ton.....	Space measure ..	40 cubic feet.
do.....	Nuremberg.....	112.43 pounds.	do.....	Peru.....	1.0143 pounds.	Tonde (cereals) ..	Denmark.....	3.94783 bushels.
do.....	Prussia.....	113.44 pounds.	do.....	Portugal.....	1.011 pounds.	Tondeland.....	do.....	1.36 acres.
do.....	Sweden.....	93.7 pounds.	do.....	Uruguay.....	1.0143 pounds.	Tsubo.....	Japan.....	6 feet square.
do.....	Vienna.....	123.5 pounds.	do.....	Venezuela.....	1.0161 pounds.	Tsun.....	China.....	1.41 inches.
do.....	Zollverein.....	110.24 pounds.	Litre.....	Metric.....	1.0567 quarts.	Tunna.....	Sweden.....	4.5 bushels.
Chih.....	China.....	220.46 pounds.	do.....	Greece.....	1.1 pounds.	Tunnland.....	do.....	1.22 acres.
Coyan.....	Sarawak.....	14 inches.	do.....	Guiana.....	1.0791 pounds.	Vara.....	Argentine Republic	34.1208 inches.
do.....	Siam (Koyan) ..	3,098 pounds.	do.....	England (timber) ..	Square, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet.	do.....	Castile.....	0.914117 yard.
Cuadra.....	Argentine Republic	2,667 pounds.	Load.....	Costa Rica.....	1 1/2 acres.	do.....	Central America ..	38.874 inches.
do.....	Paraguay.....	4.2 acres.	Manzana.....	Bolivia.....	0.507 pound.	do.....	Chile and Peru.....	33.367 inches.
do.....	Paraguay (square) ..	78.9 yards.	Marc.....	India.....	823 pounds.	do.....	Cuba.....	33.384 inches.
do.....	Uruguay.....	8.077 square feet.	Maund.....	Metric.....	39.37 inches.	do.....	Curaçao.....	33.375 inches.
Cubic metre.....	Metric.....	Nearly 2 square feet.	Metre.....	Denmark.....	4.68 miles.	do.....	Mexico.....	33 inches.
Cwt. (hundred- weight) ..	British.....	35.3 cubic feet.	Mil.....	Denmark (geograph- ical) ..	4.61 miles.	do.....	Paraguay.....	34 inches.
do.....	Russia.....	112 pounds.	Morgen.....	Prussia.....	0.63 acre.	do.....	Venezuela.....	33.384 inches.
Dessiatine.....	Spain.....	2,6997 acres.	Oke.....	Egypt.....	2.7225 pounds.	Vedro.....	Russia.....	2.707 gallons.
do.....	Greece.....	1 half ounce.	do.....	Greece.....	2.84 pounds.	Verges.....	Isle of Jersey.....	71.1 square rods.
Drachme.....	Japan.....	1 inch.	do.....	Hungary.....	3.0817 pounds.	Verst.....	Russia.....	0.663 mile.
Dun.....	(See CONSULAR RE- PORTS No. 144.)		do.....			Vlocka.....	Russian Poland ..	41.98 acres.
Egyptian wts. and measures.								
Fanega (dry) ..	Central America ..	1.5745 bushels.						

Metric weights.

Milligram ($\frac{1}{1000}$ gram) equals 0.0154 grain.
Centigram ($\frac{1}{100}$ gram) equals 0.1543 grain.
Decigram ($\frac{1}{10}$ gram) equals 1.5432 grains.
Gram equals 15.432 grains.
Decagram (10 grams) equals 0.3527 ounce.
Hectogram (100 grams) equals 3.5274 ounces.
Kilogram (1,000 grams) equals 2.2046 pounds.
Myriagram (10,000 grams) equals 22.046 pounds.
Quintal (100,000 grams) equals 220.46 pounds.
Millier or tonnes—ton (1,000,000 grams) equals 2,204.6 pounds.

Metric dry measure.

Millimetre ($\frac{1}{1000}$ metre) equals 0.061 cubic inch.

Centilitre ($\frac{1}{100}$ litre) equals 0.6102 cubic inch.
Decilitre ($\frac{1}{10}$ litre) equals 6.1022 cubic inches.
Litre equals 0.908 quart.
Decalitre (10 litres) equals 9.08 quarts.
Hectolitre (100 litres) equals 2.838 bushels.
Kilolitre (1,000 litres) equals 1.308 cubic yards.

Metric liquid measure.

Millilitre ($\frac{1}{1000}$ litre) equals 0.27 fluid ounce.
Centilitre ($\frac{1}{100}$ litre) equals 0.338 fluid ounce.
Decilitre ($\frac{1}{10}$ litre) equals 0.845 gill.
Litre equals 1.0567 quarts.
Decalitre (10 litres) equals 2.6417 gallons.
Hectolitre (100 litres) equals 26.417 gallons.
Kilolitre (1,000 litres) equals 264.17 gallons.

Metric measures of length.

Millimetre ($\frac{1}{1000}$ metre) equals 0.0394 inch.
Centimetre ($\frac{1}{100}$ metre) equals 0.3937 inch.
Decimetre ($\frac{1}{10}$ metre) equals 3.937 inches.)
Metre equals 39.37 inches.
Decametre (10 metres) equals 393.7 inches.
Hectometre (100 metres) equals 328 feet 1 inch.
Kilometre (1,000 metres) equals 0.62137 mile (3,280 feet 10
inches).
Myriametre (10,000 metres) equals 6.2137 miles.

Metric surface measures.

Centare (1 square metre) equals 1.550 square inches.
Are (100 square metres) equals 119.6 square yards.
Hectare (10,000 square metres) equals 2.471 acres.

THE METRIC SYSTEM.

Prepared by the Bureau of Coast and Geodetic Survey, U. S. A.

ELEMENTS OF THE METRIC SYSTEM.				EQUIVALENTS OF CUSTOMARY AND METRIC WEIGHTS AND MEASURES.			
Length.	Surface.	Capacity.	Weight.	Notation.	1 kilometre	1 mile	1.60935 kilometres.
Myriametre			Metric ton	1,000,000	1 metre.....	3.28083 feet.	0.914402 metre.
Kilometre.....			Quintal.....	100,000	1 centimetre ..	0.3937 inch.	0.304801 metre.
Hectometre.....			Myriagram.....	10,000	1 hectare.....	2.471 acres.	25.4001 millimetres.
Decametre.....			Kilogram.....	1,000	1 are.....	119.6 square yards.	1 square mile.....
METRE.....			Hectogram.....	100	1 metric ton ..	2,204.62 pounds.	1 acre.....
Decimetre.....			Decalitre.....	10	1 kilogram.....	2.20462 pounds.	1 square foot.....
Centimetre.....			Gram.....	1	1 gram.....	15.43236 grains.	1 pound.....
Millimetre.....			Decigram.....	0.1	1 hectolitre.....	2.8377 bushels.	1 grain.....
			Centigram.....	0.01	1 hectolitre.....	26.417 gallons.	1 bushel.....
			Milligram.....	0.001	1 litre.....	1.0567 quarts.	1 gallon.....
					1 stère.....	1.308 cubic yards.	1 cubic foot.....

METRIC WEIGHTS AND MEASURES.

Prepared by the American Engineering firm of C. W. Hunt Co., New York, U. S. A.

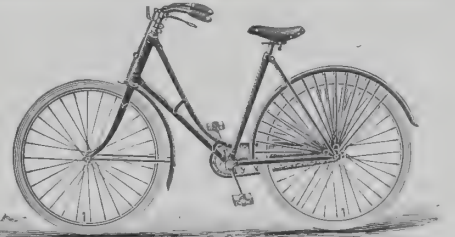
Millimetres $\times 0.03937$ = inches.	Square centimetres $\times 6.451$ = sq. inches.	Litres $\times 28.316$ = cubic feet.	Kilogr. per sq. cent. $\times 14.223$ = lbs. per sq. in.
Millimetres $\div 25.4$ = inches.	Square metres $\times 10.764$ = sq. feet.	Hectolitres $\times 3.531$ = cubic feet.	Kilogram-metres $\times 7.233$ = foot lbs.
Centimetres $\times 0.3937$ = inches.	Square kilometres $\times 247.1$ = acres.	Hectolitres $\times 2.84$ = bushels (2,150.42 cu. in.)	Kilo per metre $\times 0.672$ = lbs. per foot.
Centimetres $\div 2.54$ = inches.	Hectare $\times 2.471$ = acres.	Hectolitres $\times 0.131$ = cubic yards.	Kilo per cu. metre $\times 0.026$ = lbs. per cu. foot.
Metres $\times 39.37$ = inches. (Act Congress.)	Cubic centimetres $\times 16.383$ = cubic inches.	Hectolitres $\times 26.42$ = gallons (231 cu. in.)	Kilo per cheval $\times 2.235$ = lbs. per H. P.
Metres $\times 3.281$ = feet.	Cubic centimetres $\times 3.69$ = fl. drams.	Grams $\times 15.432$ = grains. (Act Congress.)	Kilowatts $\times 1.34$ = horse-power.
Metres $\times 1.094$ = yards.	Cubic centimetres $\div 29.57$ = fluid oz. (U. S. P.)	Grams $\div 981$ = dynes.	Watts $\div 746$ = horse-power.
Kilometres $\times 0.621$ = miles.	Cubic metres $\times 35.315$ = cubic feet.	Grams (water) $\div 29.57$ = fluid ounces.	Watts $\div 0.7373$ = foot pounds per second.
Kilometres $\div 1.6093$ = miles.	Cubic metres $\times 1.308$ = cubic yards.	Grams $\times 23.35$ = ounces avoirdupois.	Calorie $\times 3.968$ = B. T. U.
Kilometres $\times 3,280.7$ = feet.	Cubic metres $\times 264.2$ = gallons (231 cu. in.)	Grams per cu. cent. $\div 27.7$ = lbs. per cu. in.	Cheval vapeur $\times 0.9863$ = horse-power.
Square millimetres $\times 0.0155$ = sq. inches.	Litres $\times 61.022$ = cubic in. (Act Congress.)	Joules $\times 0.7373$ = foot pounds	(Centigrade $\times 1.8$) $\div 32$ = degree Fahrenheit.
Square millimetres $\div 645.1$ = sq. inches.	Litres $\times 35.84$ = fluid ounces (U. S. Phar.)	Kilograms $\times 2.2046$ = pounds.	Franc $\times 0.193$ = dollars.
Square centimetres $\times 0.155$ = sq. inches.	Litres $\times 0.2642$ = gallons (231 cu. in.)	Kilograms $\times 35.3$ = ounces avoirdupois.	Gravity Paris = 980.94 centimetres per sec.
	Litres $\times 3.78$ = gallons (231 cu. in.)	Kilograms $\div 1,102.3$ = tons (2,000 lb.)	



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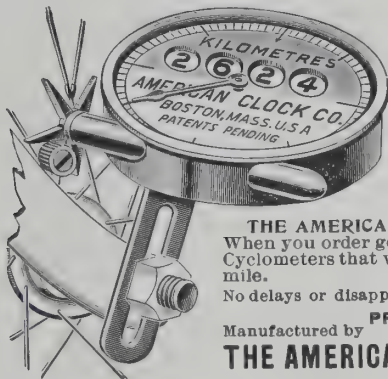
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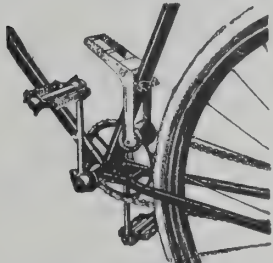
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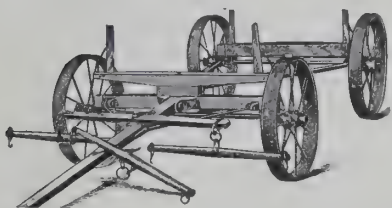
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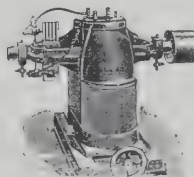
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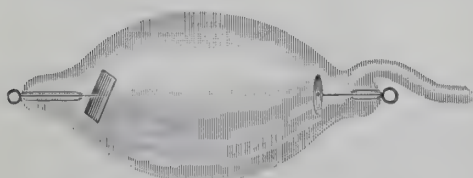
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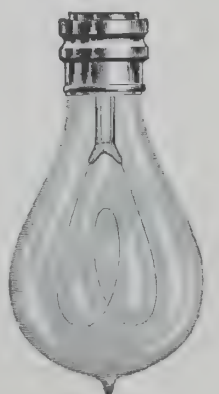


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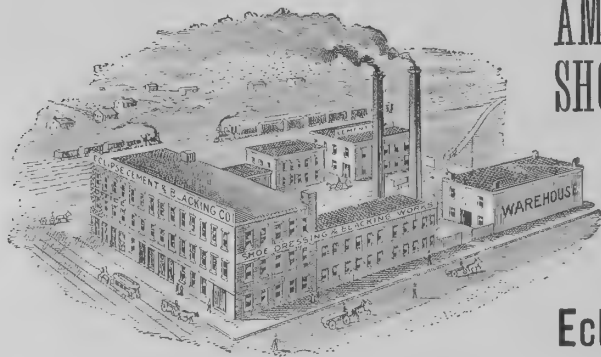


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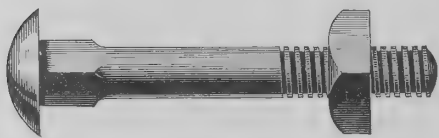


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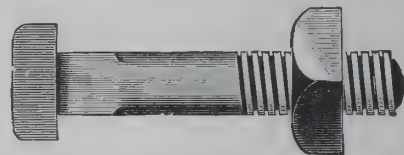
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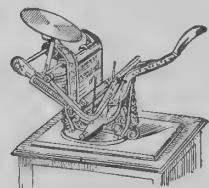
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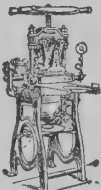


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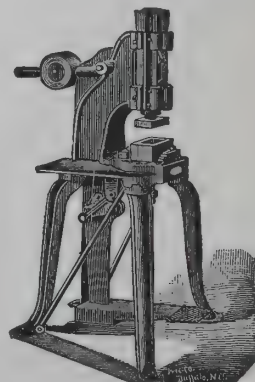


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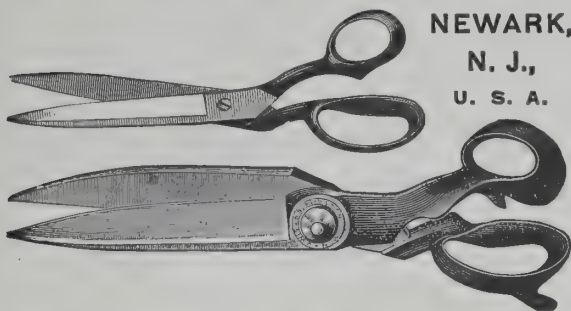
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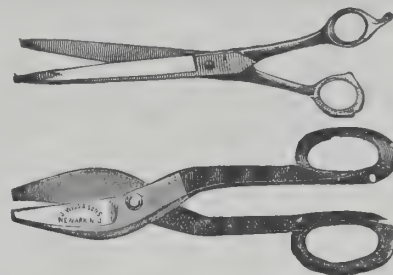
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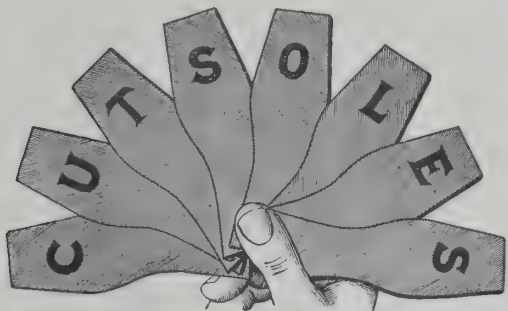
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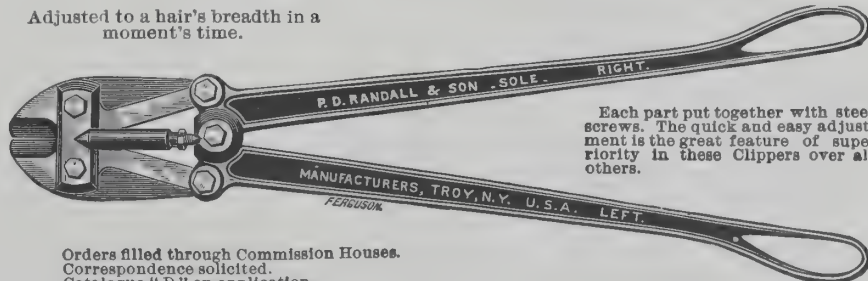
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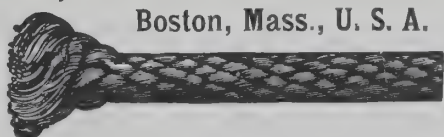
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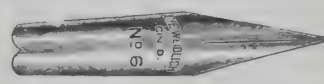
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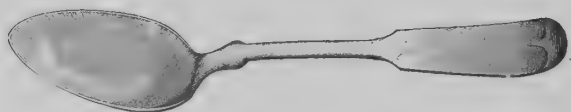
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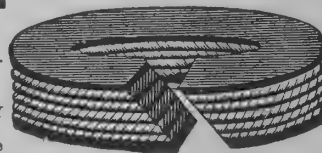
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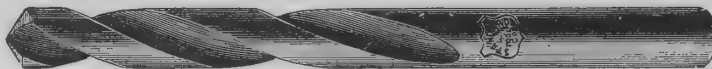


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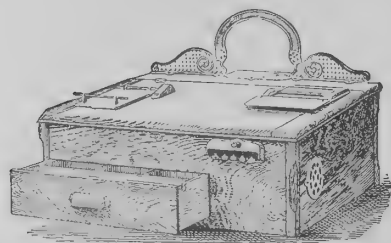
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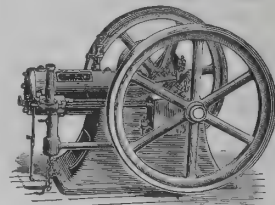
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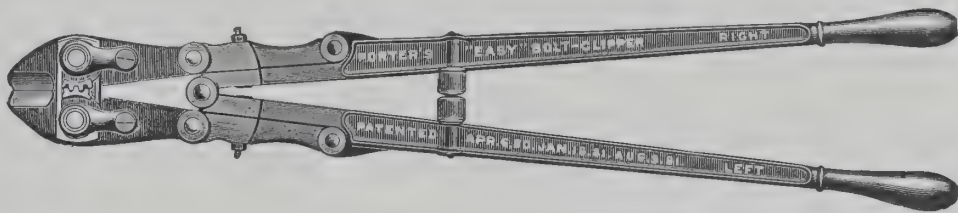
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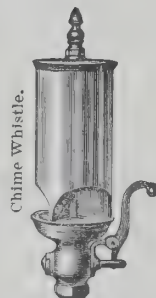
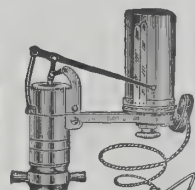
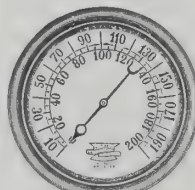
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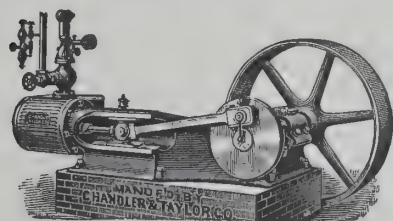


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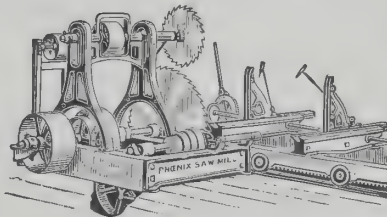
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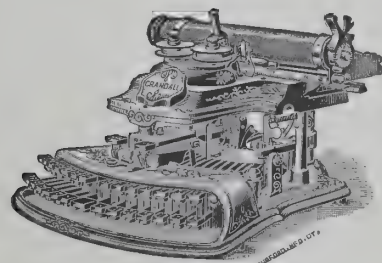
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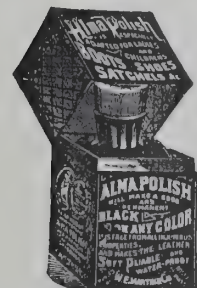
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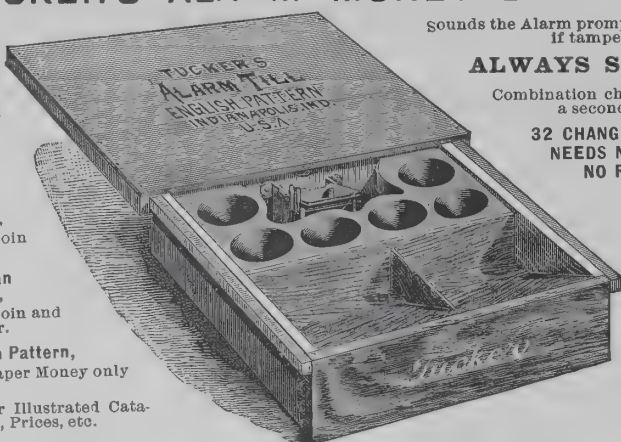
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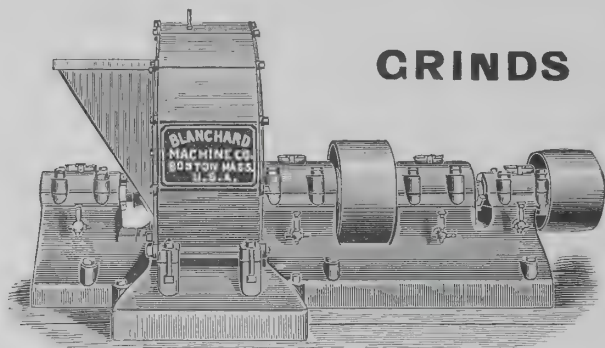
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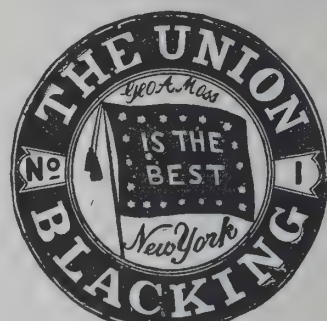
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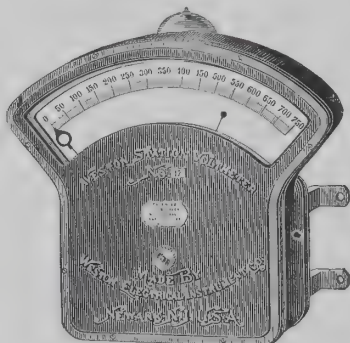
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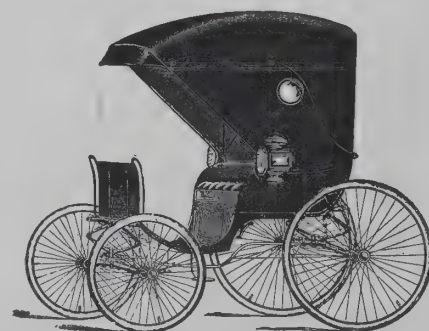
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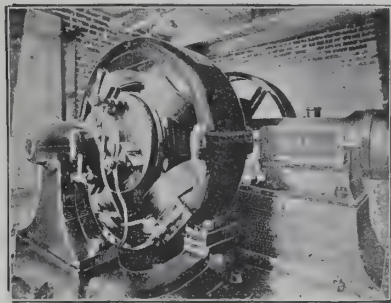
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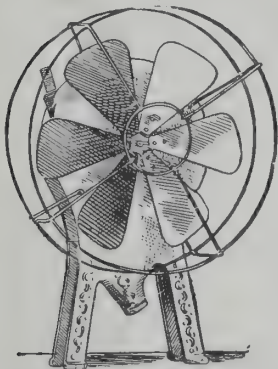
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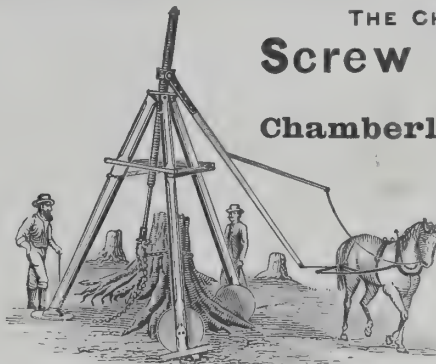
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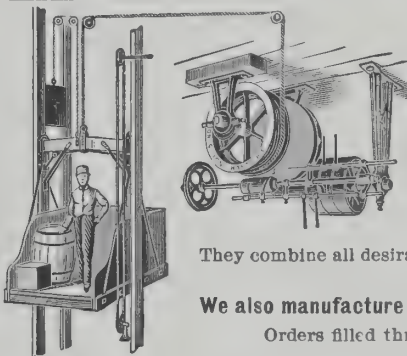
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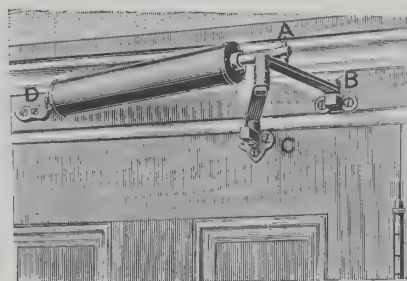
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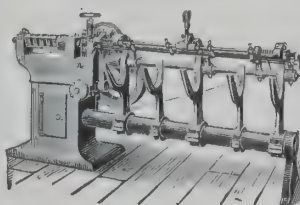
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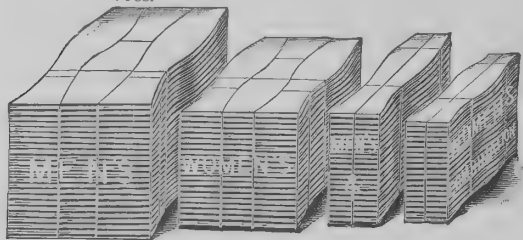
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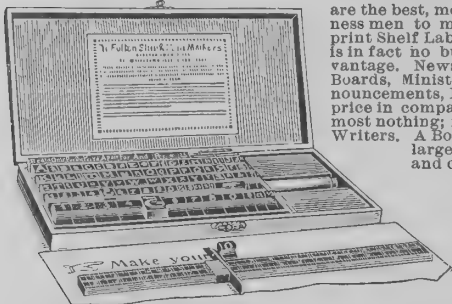
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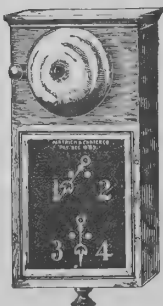
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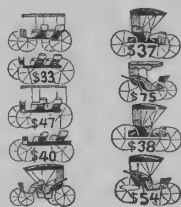
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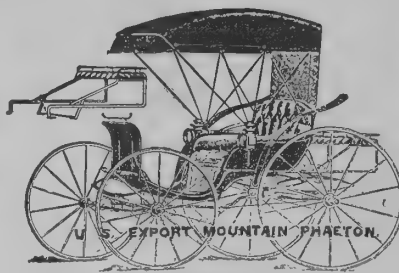
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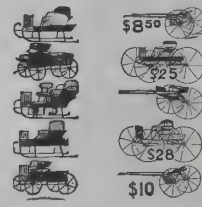
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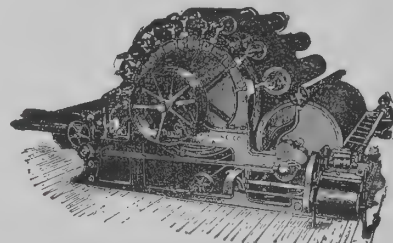
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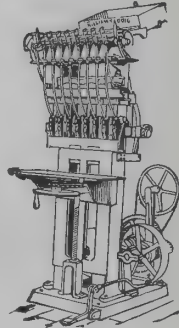
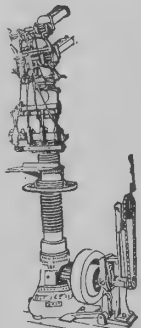
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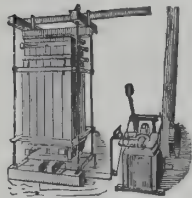
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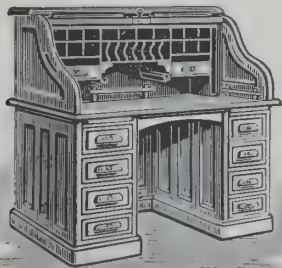
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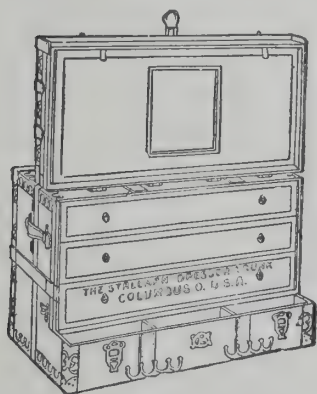
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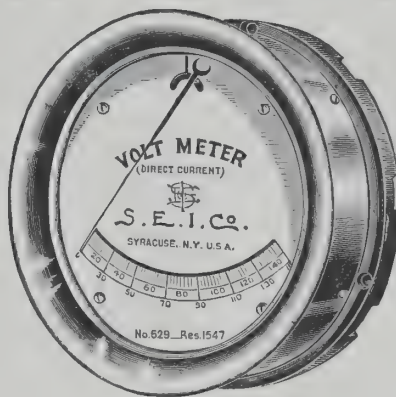
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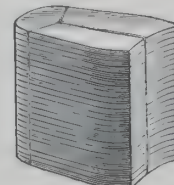
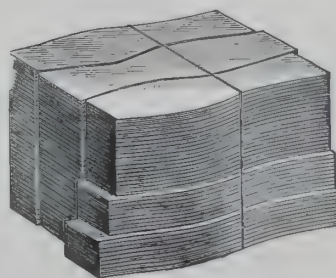
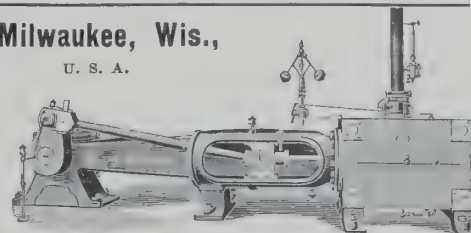
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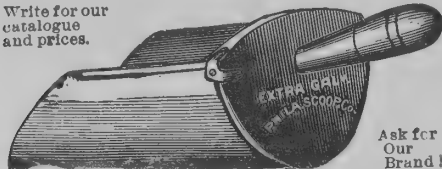
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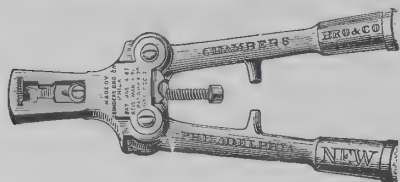
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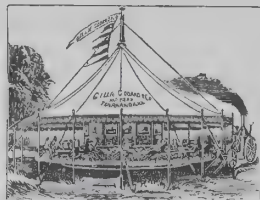
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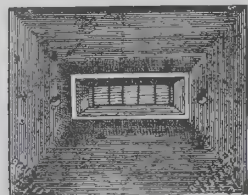
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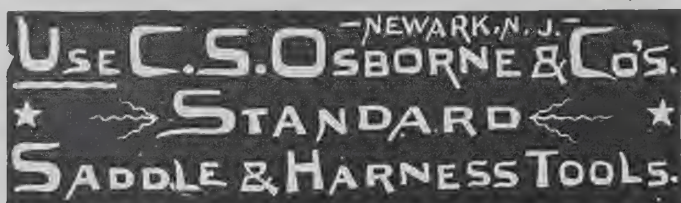
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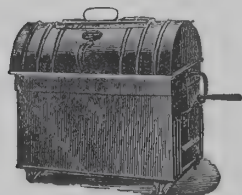
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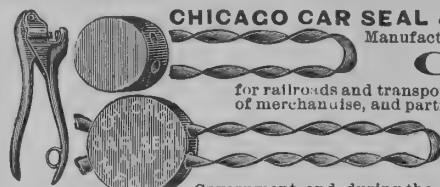
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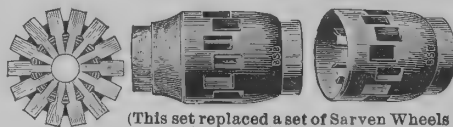
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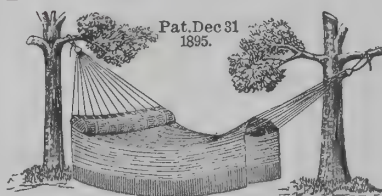
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